TRILUTION™ LH v2.0 User's Guide

TRILUTION™ LH

GILSON

TRILUTION™ LH v2.0 User's Guide

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About the User's Guide

This TRILUTION™ LH Software User's Guide is for the users of Gilson Liquid Handling instruments. It provides instructions for TRILUTION LH.

The information contained in this document is intended for the laboratory operators or individuals doing research activities.

How to Use TRILUTION LH User's Guide

The chapters are sequenced based on the TRILUTION LH functionality.

The following table lists the material covered in each chapter:

Chapter Name	*Description*
TRILUTION™ LH Software Overview	Provides a TRILUTION LH overview
Task Builder	Provides information on how to build a Task
Method Builder	Provides information about the Method Builder
Method Builder - Configuration	Provides information on how to select instruments and set their properties to build a Configuration as part of a Method
Method Builder - Bed Layout	Provides information on how to design a Bed Layout as part of a Method
Method Builder - Method	Provides information about how to build a Method
Method Builder - Error Handling	Provides information about how to set up error handling as part of a Method
Application	Provides information on how to build an Application
Application - Manual Control	Provides information about how to send manual commands to an instrument in a Configuration
Working with Variables	Provides information on how to use Variables, Operators, and build Expressions
Generating Reports	Provides information about viewing and exporting reports

Chapter Name	*Description*
Tasks - Liquid Handling	Provides a list and description of the Liquid Handling Tasks
Tasks - SS Liquid Handling	Provides a list and description of the SS Liquid Handling Tasks
Tasks - Disposable Tips	Provides a list and description of the Disposable Tips Tasks
Tasks - SPE	Provides a list and description of the SPE Tasks
Tasks - Tweaks	Provides a list and description of the Tweaks Tasks
Tasks - Auxiliary	Provides a list and description of the Auxiliary Tasks
Rinse Locations	Provides a description of rinse positions
Bed Layout and Utilities	Provides information about building custom racks and templates for use in Bed Layouts
Electronic Record Management (ERM) Features	Provides information about the features available in TRILUTION LH to assist in attaining 21 CFR Part 11 compliance through implementation of Electronic Record Management (ERM)
GSIOC Configuration Editor	Provides information about how the GSIOC Configuration Editor enables you to modify COM (serial communications) port and baud rate information
GSIOC Utility	Provides information about how to use the GSIOC Utility to issue commands to Gilson GSIOC instruments

Glossary

Terminology	*Definition*
Application	A file with a set of Methods to execute a set of actions to obtain the experiment results.
Application Run	The act of executing an Application to get desired results.
Bed Layout	A file that specifies the location of solutions on the bed and rinse stations.
Command	A Control call representing a single action.
Configuration	A group of selected instruments.
Element	A base record that includes footprints, vials, and targets.
Footprint	A placeholder for a Rack.
Handle	A position designated in a rack which makes the rack mobile. Zones cannot be assigned to a handle.

Terminology	*Definition*
Method	A files with a set of Tasks and a Configuration that performs actions when used in an Application Run.
Origin	Defined by the user, the location of the coordinates X=0, Y=0, Z=0.
Property	A Parameter.
Rack	A Rack requires a Footprint before it can be added to a Template. Examples of racks are Racks, Rinse Stations, Injection Port Bars, Tip Boxes, and Microplates.
Target	A position defined within a well. Zones can be assigned to a target.
Task	A file with a set of Commands and Operators to perform a sequence of actions.
Tray	A placeholder with footprints to hold the Racks.
Well	Wells (specifically custom wells) can only go in Racks.

TRILUTION™ LH Software Overview 1

TRILUTION™ LH Software is software for controlling automated liquid handling instruments. TRILUTION LH innovative features include:

- Simple drag-and-drop method creation
- Multiple configurations and bed layouts to provide the ultimate in laboratory and application flexibility
- Integrated customization to create racks and tasks
- Graphical application simulation to ensure the functionality and reliability of the application prior to use with precious samples
- Easy integration with third-party applications and hardware
- Automatic support for international locale settings

Unpacking TRILUTION LH

Unpack TRILUTION LH upon receipt even if the software will not be used immediately. Many carriers must receive concealed damage claims within seven days of delivery.

Customer Service

Gilson, Inc. and its worldwide network of authorized representatives provide customers with the following types of assistance: sales, technical support, applications, and instrument repair.

If you need assistance, please contact your Gilson-authorized representative. Specific contact information can be found on the Gilson website at www.gilson.com.

Before Calling Us

Gilson-authorized representatives will be able to serve you more efficiently if you have the following information:

- Serial number and model number of the Gilson instruments involved
- Installation procedures that were used
- List of concise symptoms
- List of operating procedures and conditions you were using when the problems arose
- List of other instruments connected to the system and a description of those connections
- List of other electrical connections in the room

Training

Training courses are offered regularly at Gilson, or a customized training course can be brought to your facility. In addition, complimentary training through use of Gilson's Quick Start Tutorial provides you with immediate access to 'how to' movies. The following TRILUTION LH training has been developed to specifically meet different experience levels.

Quick Start Tutorial

Let Gilson's Quick Start Tutorial assist you with learning and using TRILUTION™ LH Software. Your purchase of a TRILUTION LH license includes the Quick Start Tutorial on CD-ROM, which automatically loads the tutorial's main menu. Six TRILUTION LH Software tutorials and an introductory tutorial are available for you to learn how to program TRILUTION LH Software for a Gilson liquid handling application. The tutorials can be launched in any order by clicking on each selection from the main menu.

Introductory TRILUTION LH Training (#TRTRILUTION1—2 days)

Two days of classroom training with TRILUTION LH provides participants with the basic tools needed to operate and understand their Gilson liquid handling system. The majority of training time is spent performing applications using the supplied tasks within the TRILUTION database. This training course is a complete and necessary introduction for the novice system and software user.

Course Objectives

After attending this course, participants will be able to:

- Control a Gilson liquid handler from TRILUTION LH
- Create a bed layout representing the positions of samples, mixing vials, reagents, standards, etc.
- Create automated methods for dilution, microplate replication, communication with a non-Gilson device, etc.
- Understand the importance of the system configuration in building methods and controlling systems, and running applications with one or more configuration
- Incorporate variables for method flexibility
- Simulate an application to check a method for errors
- View and understand log files

Advanced TRILUTION LH Training (#TRTRILUTION2—2 days)

This advanced training course builds on the information presented in the introductory training course #TRTRILUTION1. Participants spend two days creating custom tasks, custom racks, and running advanced exercises and applications specific to their needs. Following training, participants will be considered advanced users with a thorough understanding of TRILUTION LH operation.

Course Objectives

After attending this course, participants will be able to:

- Customize racks within TRILUTION LH
- Interface TRILUTION LH with other software through custom tasks and/or contact closure
- Understand and utilize operators to add flexibility to tasks and methods: variables, expressions, loops, “if-then”, “if-else”, and “go to”
- Create and utilize custom tasks within TRILUTION LH to build specific and flexible applications
- Understand and utilize sample lists effectively for variables and volume tracking
- Create users and groups using the security functions

For further information on TRILUTION LH training courses or for course registration, please contact Gilson at training@gilson.com. For a comprehensive training calendar of courses available at Gilson, Inc., please visit www.gilson.com.

Launching TRILUTION LH

Windows®2000

When using Microsoft® Windows® 2000 operating system, do one of the following:

- Click **START** and select **PROGRAMS>GILSON APPLICATIONS>TRILUTION LH>TRILUTION LH.**
- On the Desktop, double-click the TRILUTION LH icon ( ). The TRILUTION log on window displays.

The TRILUTION Log On Window

Windows® XP

When using Windows® XP operating system do one of the following:

- Click **START** and select
  ALL PROGRAMS>GILSON APPLICATIONS>TRILUTION LH>TRILUTION LH.
- On the desktop double-click the TRILUTION LH icon. The TRILUTION log on window displays.

The TRILUTION Log On Window

Both Operating Systems

In the TRILUTION log on window, do the following:

- In the User Name field, type your user name.
- In the Password field, type your password.

	Password is case sensitive and has a 20-character limit.

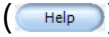
- Click **LOG ON**.

The Liquid Handling menu displays.

Help

On-line help is included with TRILUTION LH. The on-line help describes commands and dialogs displayed in the software and describes the procedures needed to perform tasks.

Access the on-line help using the following:

- (***Windows® 2000***) Click **START** and then select **PROGRAMS>GILSON APPLICATIONS>TRILUTION LH>TRILUTION LH HELP.**
- (***Windows® XP***) Click **START** and then select **ALL PROGRAMS> GILSON APPLICATIONS>TRILUTION LH> TRILUTION LH HELP.**
- Place your mouse cursor over a button within TRILUTION LH to view the pop-up description for that button.
- Click (

) to display help about the dialog box.
- Click to display help about the window.
- Click to display help about the menu.

TRILUTION LH Menus

TRILUTION LH has two main menus: Liquid Handling and Administrative Tools. Click the Main Menu icon ( ) in the lower right corner of any builder to bring forward the main menu. A description of these menus and submenus are as follows:

Liquid Handling Menu

Use the options in this menu to create, organize, and run your application.

Menu	*Described on*
Application	page 1-12
Method Builder	page 1-12
Custom Task Builder	page 1-12
Utilities	page 1-13
Reports	page 1-18
About	page 1-18

Application

This menu allows you to create a Sample List and run an Application.

Method Builder

The Method Builder provides the ability to specify method conditions for controlling instruments.

Custom Task Builder

The Custom Task Builder provides the ability to create, modify, delete, export, and import tasks. A task is an action to be performed on a specific instrument and serves as a building block for a Method. Tasks are a combination of Commands and Operators.

Utilities

Utilities accesses another menu with options for setting units, viewing run results, purging and recovering items, creating custom Bed Layouts, registering TRILUTION LH, and enabling ERM.

Menu	*Described On*
Unit Settings	page 1-14
Run Results	page 1-14
Purge and Recover	page 1-15
Bed Layout and Utilities	page 1-15
Register	page 1-16
ERM	page 1-16

Back

Click the Back button ( ) to return to the previous menu.

Unit Settings

Members of the default Admin group can use Unit Settings to set the units of measurement for the Commands and Tasks and elsewhere in the software. Only Users assigned to the Admin group have Unit Setting capabilities. Unit Types are listed in the following table:

Unit Type	*Units of Measurement*
XYZ Movement	mm, cm
Speed of Movement	cm/sec, mm/hr, mm/min, mm/sec
Volume	mL, nL, µL
Flow Rate	mL/hr, mL/min, mL/sec, µL/min, µL/sec
Time	hrs/min/sec
Pressure	psi, MPa, Bar
Temperature	C, F, K
WaveLength	nm
Mass	mg, µg

Run Results

Use the Run Results utility window to review application run and/or simulation run results. The Utilities Run Results window provides the ability to view, export, archive, restore and refresh the application run and/or simulation run results.

Purge and Recover

Use the Purge and Recover utility window to permanently delete files from the database and/or restore deleted files back to their respective palettes. It has the following buttons in the action bar:

- **PURGE**: Permanently deletes the files from the database. Purged files cannot be recovered.
- **RECOVER**: Provides the ability to restore files back to their respective palettes. Files deleted from the database cannot be recovered.

Close the Application window before attempting to recover an application.

Bed Layout and Utilities

Use this utility to create custom templates and racks. For more information, see ***Appendix H, Bed Layout and Utilities***.

Register

Use the Registration menu to register for a licensed version of TRILUTION LH. Two tabs are available:

- **Overview:** Explains the registration process.
- **Registration Information:** User information is entered here.

ERM

The implementation of an Electronic Record Management (ERM) system can be complex. TRILUTION LH has the ability to assist in attaining 21 CFR Part 11 compliance through the implementation of Electronic Record Management. The ERM Features allow electronic records security and tracking (audit trails), electronic signatures, and method versioning of records, as well as permitting customized user access levels within the software.

This menu, accessible only to members of the default Admin group, provides options for electronic record management.

ERM Features

This menu is accessed from the ERM menu by a member of the default Admin group. ERM is enabled from this menu by selecting the Enable ERM Features check box. TRILUTION LH defaults with this box cleared (ERM features disabled).

TRILUTION LH provides for the option to enable signature points each time a component is saved. Enable this option by first selecting to Enable ERM Features and then select the Enable Signature Points check box. The Enable Signature Points defaults cleared (no signatures required when saving).

Audit Trail

This menu is accessed from the ERM menu by a member of the default Admin group. The Audit Trail dialog offers three options: Audit Trail, Event Log, and E-Signature.

Audit Trail records the details of changes made in any of the builders prior to a save. Double-click the event in the Audit Trail to display the details of the changes or click **PREVIEW** to view the information in a report format.

Event Log records the click of any action button in all builders.

E-Signature records the details (including comments entered) of each e-signature prior to a save.

Database Import/Export

Use the Database Import/Export utility to make a backup copy of the database.

Reports

This menu provides the ability to generate the following report types: Task, Method, Sample Tracking and Application. For a detailed description of the reports, see **Reports Overview** on page 11-3.

About

This menu displays the license information.

Administrative Tools

Use the Administrative Tools menu to create Users and Groups and Change Passwords. The Administrative Tools menu options are:

- **User Settings:** Choose whether or not TRILUTION LH should remember your user name when logging on. See **User Settings** on page 1-19.
- **Change Password:** Change passwords. See **Change Password** on page 1-19.
- **Users and Groups:** Create and modify Users and Groups. See **Users and Groups** on page 1-20.

User Settings

To have TRILUTION LH remember your user name every time you log on, access the **USER SETTINGS** option in the Administrative Tools menu. TRILUTION LH default is checked so TRILUTION LH will remember your user name.

Change Password

A member of the default Admin group provides the user name and the default password.

To change the Password

1 On the main menu, click **ADMINISTRATIVE TOOLS**.

2 On the Administrative Tools menu, select the **CHANGE PASSWORD** option. The Change Password window displays.

3 On the Change Password window, do the following:

a) In the Current User Name field, verify your user name.

b) In the Current Password field, type your old password.

c) In the New Password field, type a new password.

d) In the Confirm Password field, type the new password again.

e) Click **OK**. The password is changed.

Password is case sensitive and has a 20-character limit.

Users and Groups

A User is an end user of the product. Every User is assigned to a Group based on the roles. A Group includes Users with common rights.

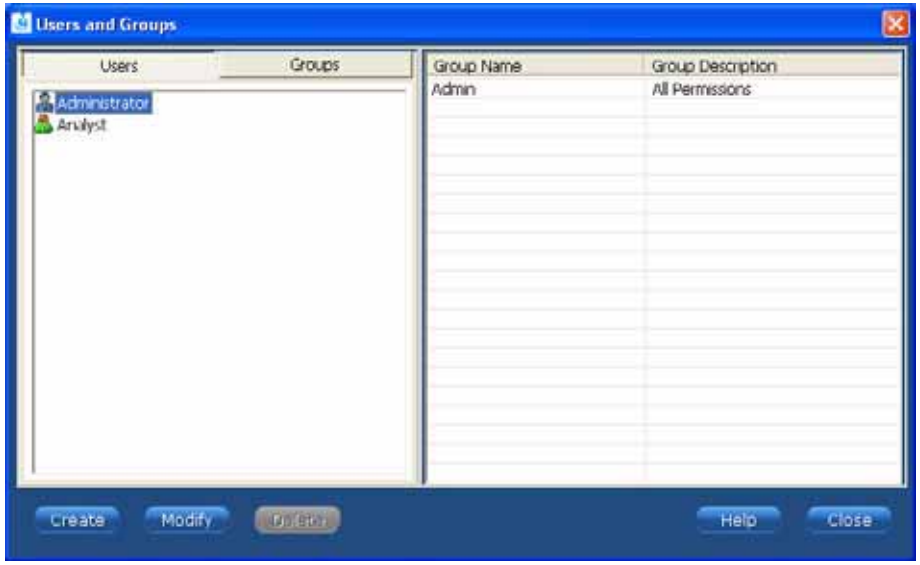
The Users and Groups menu allows you to create, modify, delete, and view Users and Groups.

During the TRILUTION LH installation, by default, two groups are created: Admin and Analyst. “Administrator” is the default user in the Admin group. The Admin group is assigned all the rights. “Analyst” is the default user in the Analyst group. The Analyst group can view, create, and modify in TRILUTION LH.

To open Users and Groups

1 On the TRILUTION menu, click **ADMINISTRATIVE TOOLS**.

2 On the Administrative Tools menu, select **USERS AND GROUPS** option.
The Users and Groups window displays.



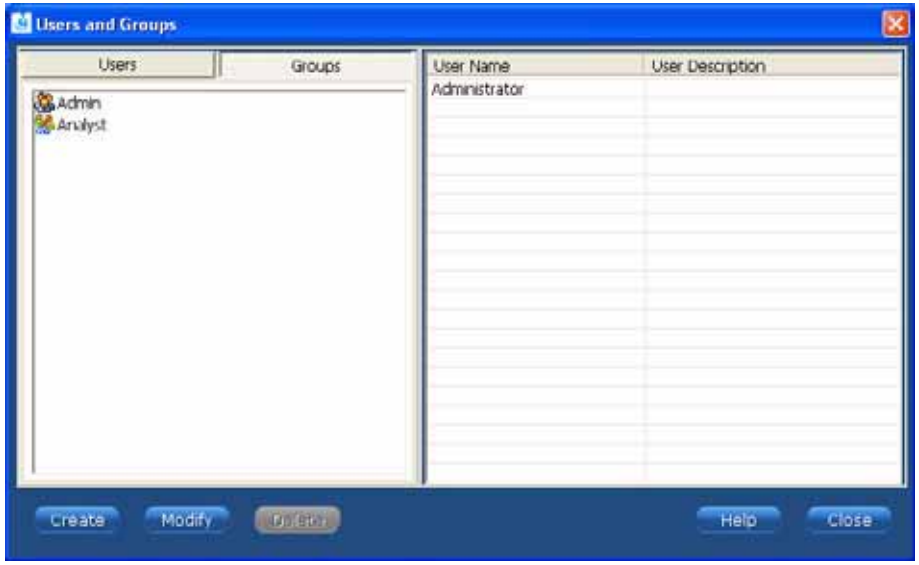
The Users and Groups window has two frames:

- The left frame provides two sections:
  a) **Users**: Create and modify Users.
  b) **Groups**: Create and modify Groups.

- The right frame displays the information based on the Tab selected:
  a) On selecting the Users tab, the Group name and Group description display.
  b) On selecting the Groups tab, the User Name and User Description display.

Only those Users within the Admin group can create, modify, or delete Users and Groups.

Groups



The Groups tab

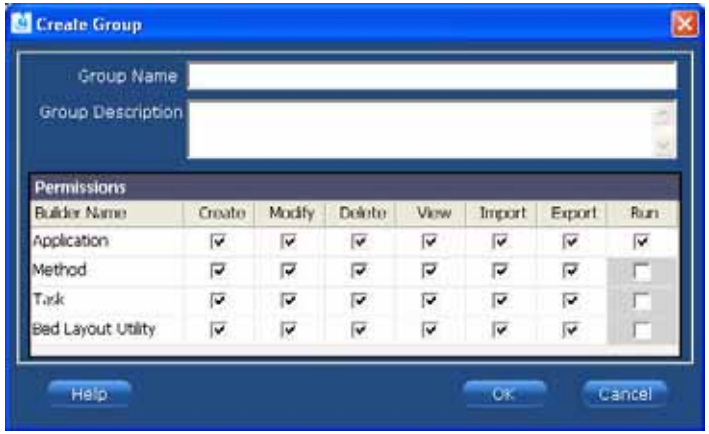
A Group combines Users with common roles. Each role has assigned permissions.

The Groups tab lists all the available Groups. You can create, modify, and delete Groups. On selecting a Group from the group tab, the Users belonging to that Group display in the right frame.

To create a Group

1 On the Users and Groups window, click **GROUPS** tab. The name of the default Groups 'Admin' and 'Analyst' display in the left frame.

2 Click **CREATE** to create a new Group. The Create Group window displays.



The Create Group window

3 In the Create Group window, do the following:

a) In the Group Name field, type a Group Name.

b) In the Group Description field (optional), type a brief Group description.

c) In the Permissions frame, select the permissions for the various builders.

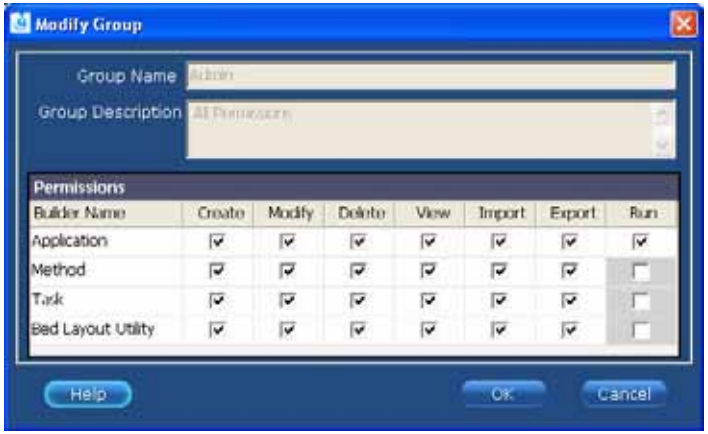
d) Click **OK**.

The new Group displays under the Groups tab.

To modify a Group

1 On the Users and Groups window, select a Group from the Groups tab. The Users belonging to that Group display in the right frame and the **MODIFY** button is enabled.

2 Click **MODIFY**. The Modify Group window displays.

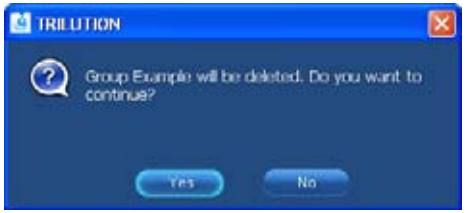


The Modify Group window

3 In the Modify Group window, make the required changes and click **OK**.

To delete a Group

1 In the **GROUPS** tab, select a Group and click the **DELETE** button. A delete confirmation dialog box displays.



2 Click **YES**.

The selected Group is deleted.

A Group with associated Users cannot be deleted until the Users are removed from the Group.

The Admin group cannot be deleted.

View Group Permissions using the Groups tab

1 On the Users and Groups window, select a Group from the **Groups** tab.

2 Click **MODIFY**. The Modify Group window displays.

3 On the Modify Group window, view the following:

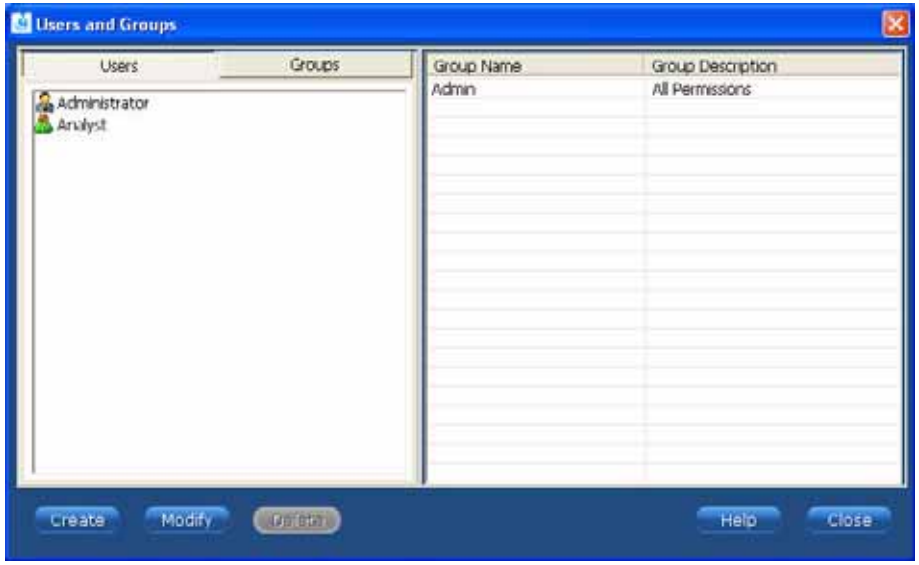
   a) In the Group Name field, the Group Name.

   b) In the Group Description field (optional), a brief description of the Group.

   c) In the Permissions table, the rights assigned to the group for the builders.

4 Click **CANCEL** to avoid saving any unwanted changes.

Users



The Users tab

Users are assigned to Groups based on their defined roles.

For Example,

- Operator
- Administrator
- Scientist

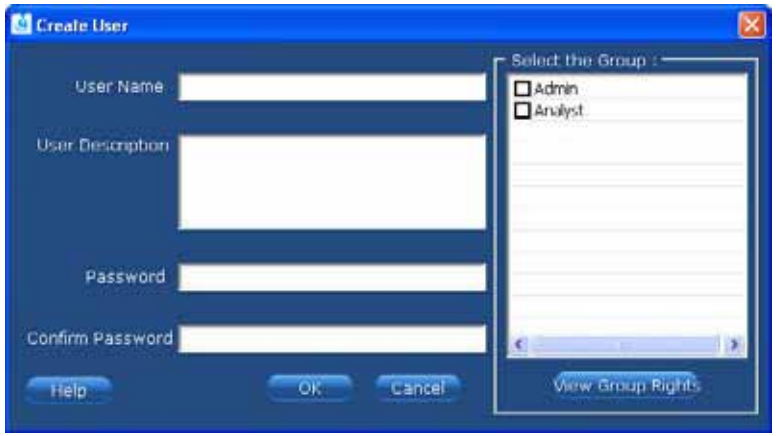
The Users tab lists all the available Users. You can create, modify, and delete Users.

Users can be assigned to one or more available groups.

To create a new User

1 On the Users and Groups window, click **USERS** tab. The default Users 'Administrator' and 'Analyst' display with their Group name in the right window.

2 Click **CREATE**. The Create User window appears.



The Create New User window

3 On the Create User window, do the following:

a) In the User Name field, type a User name.

b) In the User Description field (optional), type a brief description of the User.

c) In the Password field, type your password.

d) In the Confirm Password field, type your password for confirmation.

User name should be unique.

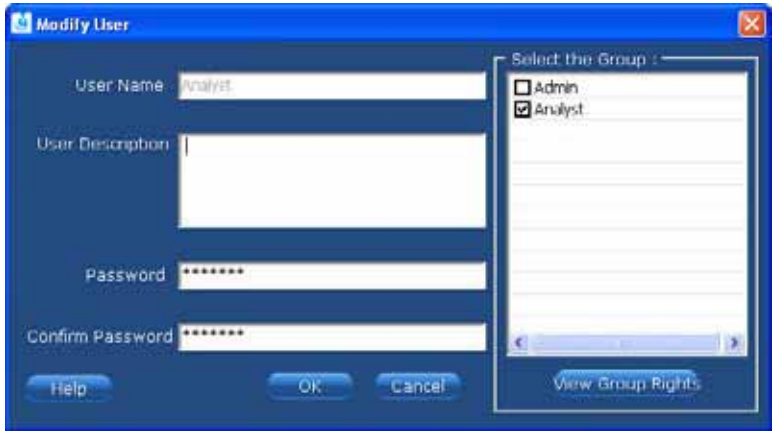
e) In the Select the Group section, select the Group(s) the User is assigned to.

4 Click **OK**.

To modify User properties

1 On the **Users** tab, select a User. The assigned Group name(s) and description(s) for that User display in the right frame.

2 Click **MODIFY**. The Modify User window displays.



The Modify User window

3 In the Modify User window, you can do the following:

a) In the User Description field (optional), change the description.

b) In the Password field, type a new password.

c) In the Confirm Password field, type the new password for confirmation.

d) In the Select the Group section, select the check box to add the User to a group or clear the check box to remove the User from a Group.

e) Click **OK**.

A User Name cannot be modified.

To delete a User

1 In the **USERS** tab, select a User and click **DELETE**. A delete confirmation dialog box displays.

2 Click **YES**.

The selected User is deleted.

To view Group Permissions

The Users and Groups tabs both provide the ability to view Group permissions.

View Group Permissions using the Users tab

1 On the Users and Groups window, select a User from the **Users** tab. The assigned Group name(s) and description(s) for the User display in the right frame.

2 Click **MODIFY**. The Modify User window displays.

3 In the Select the Group section, click **VIEW PERMISSIONS**.

a) When multiple Groups are selected, TRILUTION LH displays a combination of all Group permissions.

b) When one Group is selected, TRILUTION LH displays permissions for that specific Group.

4 On the View Group Access Permissions window, view the following:

a) In the Group Name field, the Group Name.

b) In the Group Description field (optional), a brief description of the Group.

c) In the Permissions table, the permissions assigned to the group for the builders.

d) Click **OK**.

Click CANCEL in the Modify User window to avoid saving Group changes to the User.

Log Off

This option ends the current user's session and allows a different user to log on to TRILUTION LH.

Lock

The Lock option allows you to manually lock out the system. All open, unsaved Tasks or Methods will remain open. Only that user or a member of the default Admin group can logon after a lockout.

The Confirm Lock window

To lock TRILUTION LH operations

1 On the main menu, click the Lock button ( ). The Confirm Lock window is displayed.

2 On the Confirm Lock window, click **LOCK**. The Unlock TRILUTION LH window is displayed.

The Unlock TRILUTION LH window

To unlock TRILUTION LH operations

On the Unlock TRILUTION LH window, in the Password field, type the password.

Closing TRILUTION LH

To close TRILUTION LH

Click on the main menu.

Task Builder 2

Tasks are combined Commands and Operators used to perform an action on a specific instrument and serve as one of the building blocks that make up a Method.

The drag-and-drop feature provides the ability to create Tasks easily by dragging the Commands, Tasks, Variables, Operators, and Expressions from the side palette and dropping them into the workspace.

A Task is positioned anywhere in the Task Builder workspace, depending on where the Task is dropped.

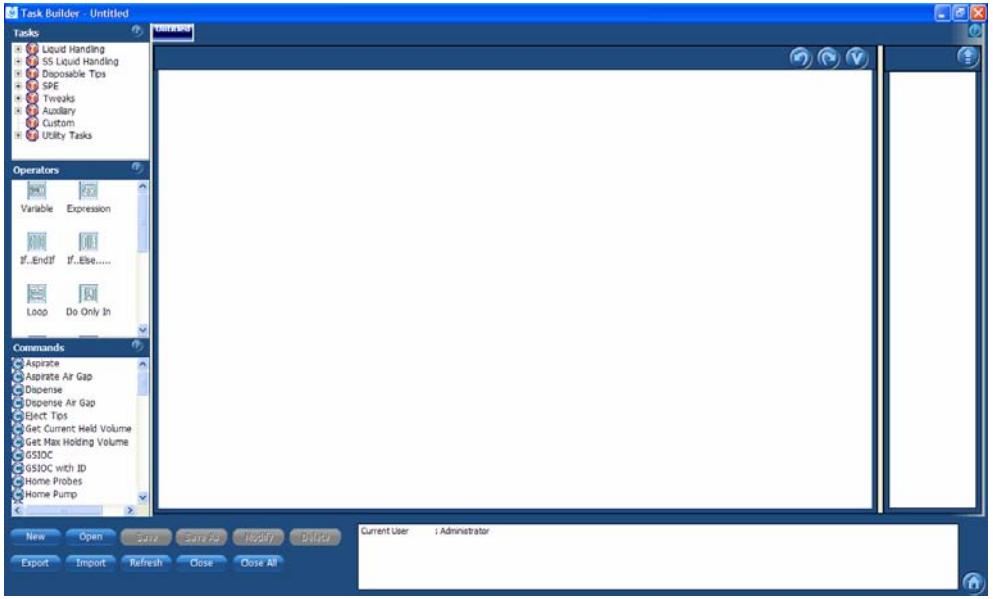
Tasks can be exported or imported across locations. The new Tasks saved are listed in the Tasks palette in the Custom folder. Multiple Tasks can be opened at a time.

Task Builder

The Task Builder is a graphical user interface used to build a Task.

Access the Task Builder by:

- clicking **CUSTOM TASK BUILDER** from the Liquid Handling menu
- right-clicking a Task in a Method and then selecting **OPEN TASK**



The Task Builder Window

Task Builder 2

The Task Builder has the following sections:

Section	*Described on*
Tasks Palette	page 2-3
Operators Palette	page 2-4
Commands Palette	page 2-4
Workspace	page 2-4
Action Buttons	page 2-8

Use the Task Builder to:

- Create New Tasks, see **Creating a Task** on page 2-10.
- Modify Existing Tasks, see **Modifying a Task** on page 2-12.
- Permanently Delete Tasks, see **Deleting Tasks** on page 2-19.
- Export Tasks to another location within TRILUTION, see **Exporting Tasks** on page 2-15.
- Import Tasks from another location within TRILUTION, see **Importing Tasks** on page 2-17.

Tasks Palette

The Tasks palette lists the saved tasks and TRILUTION LH pre-defined tasks.

Operators Palette

The Operators palette lists the Operators, Variables, and Expressions.

Commands Palette

The Commands palette lists the available Commands.

Workspace

The workspace is used to build new or modify existing tasks. The left panel provides the sequence. The right panel contains the details for a selected operator or expression. Commands are represented by the following icon: . Tasks are represented by the following icon: .

Toolbar

Provides quick access to some options available in the Task window. To activate a tool, click on its icon.

Undo/Redo

The Undo ( ) and Redo( ) buttons provide the ability to Undo and Redo the last action within the Task.

Variable List

Lists the available variables for the Task. Click the ( ) button to view the list of variables used in the Task.

Click **NEW VARIABLE** to add additional variables or highlight an existing variable and click **MODIFY**.

For more information about variables, see ***Chapter 10, Working with Variables***.

Back

The Back button ( ) provides the ability to return focus to the left panel in the workspace.

Right-click menu

Command

Right-click on a Command icon to display the following menu options:

Menu	*Description*
CUT	Cuts the Command for deleting or pasting in a new location in the workspace, in an operator or expression, or in another Task.
COPY	Copies the Command to duplicate in a new location in the workspace, in an operator or expression, or in another Task.
PASTE	Places a cut or copied Command in the workspace, in an operator or expression, or in another Task.
DELETE	Removes the Task from the workspace.
LINE BREAK	A toggle for moving the selected element after the selected element to the next line below the selected element.
PROPERTIES	Opens the Command property page for the selected Command.

Task

Right-click on a Task icon to display the following menu options:

Menu	*Description*
CUT	Cuts the Task for deleting or pasting in a new location in the workspace, in an operator or expression, or in another Task.
COPY	Copies the Task to duplicate in a new location in the workspace, in an operator or expression, or in another Task.
PASTE	Places a cut or copied Task in the workspace, in an operator or expression, or in another Task.
DELETE	Removes the Task from the workspace.
LINE BREAK	A toggle for moving Tasks after the selected Task to the next line below the selected Task.
PROPERTIES	Opens the task property page for the selected Task.
OPEN TASK	Opens the Task.

Workspace

Right-click in the workspace to display the following menu options:

Menu	*Description*
PASTE	Places a cut or copied Task in the workspace, in an operator or expression, or in another Method.
VIEW EXTENDED	Hides the right panel in the workspace.
VIEW NORMAL	Shows the right panel in the workspace.

Action Buttons

The following action buttons are located in the lower left corner of the Task Builder.

Action Button	*Description*
NEW	Create a new Task.
OPEN	Open an existing Task.
SAVE	Save an existing Task to the same name. Optionally, type a description and/or choose a custom icon to represent the Task in the Method.
SAVE AS	Save a new Task or save an existing Task to a new name. Optionally, type a description and/or choose a custom icon to represent the Task in the Method.

Action Button	*Description*
MODIFY	Modify the description or custom icon for the Task.
DELETE	Deletes the open Task or all versions of the Task.
EXPORT	Exports selected Tasks to a specified location as .LHTE files.
IMPORT	Imports a .LHTE file and lists the Task in the Tasks palettes and replaces it in the Method.
REFRESH	Allows you to reload the Tasks palette with any new Tasks created.
CLOSE	Closes the open Task while leaving the Task Builder open.
CLOSE ALL	Closes all open Tasks while leaving the Task Builder open.

Creating a Task

Create a Task by adding Commands, Tasks, Variables, Operators, and Expressions to the workspace.

The drag-and-drop feature allows easy creation of a Task. You can drag and drop Commands, Tasks, Variables, Expressions, and Operators into the workspace. Saved Tasks are listed in the Tasks palette.

An element (Task, Command, Expression, or Operator) is positioned anywhere in the Task Builder workspace, depending on where the element is dropped.

To create a Task

Do one or both of the following one or many times:

- From the Commands palette, drag a Command and then drop it in the workspace. The command property page for that Command appears.

  Review the values for each task property and modify, if necessary.

- From the Tasks palette, drag a Task and then drop it in the workspace. The task property page for that Task appears.

  Review the values for each task property and modify, if necessary.

- From the Operators palette, drag an expression, variable, or operator and then drop it in the workspace.

Viewing a Task

To view a task from the Task Builder do the following:

- Locate the task within the Tasks palette and do one of the following:
  - Double-click on the name of the Task.
  - Right-click on a task and click **OPEN** from the submenu.
  - Click **OPEN**. The Open Task window displays.
    a) Clear the Show Latest Versions check box to view all versions of all Tasks that have been created on the computer and have not been deleted.
    b) Select the Task.
    c) Click **OK**.

The Task displays in the workspace.

Multiple Tasks can be open in the same builder. Individual tabs display at the top of the window for each open Task. Click on the individual tab to view the Task within the workspace.

Modifying a Task

You can modify a Task by doing the following:

- Adding Tasks, Commands, Variables, Operators, and Expressions to the workspace.
- Deleting Tasks, Commands, Variables, Operators, and Expressions from the workspace.
- Modifying the properties of the Tasks, Commands, Variables, Operators, and Expressions in the workspace.
- Changing the description or custom icon.

When you right-click on a Task, Command, Variable, Operator, or Expression in the workspace, a menu displays with the following options: **CUT**, **COPY**, **PASTE**, **DELETE**, **LINE BREAK**, **VIEW**, or **PROPERTIES**. Right-click on Tasks also provides an **OPEN TASK** option. To paste, right-click anywhere in the workspace and select **PASTE** from the menu.

Modifying Tasks

1 To open a Task, see **Viewing a Task** on page 2-11.

2 To make changes do one of the following:

- To save changes to the existing Task, click **SAVE.**

	Gilson-supplied tasks cannot be saved using the supplied name.

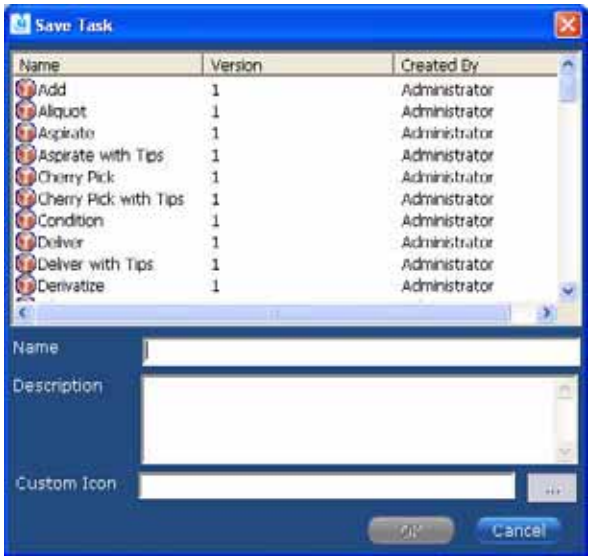
- To save changes to a new Task and save with a different name, click **SAVE AS.** The Save Task As window displays.
- On the Save Task As window, do the following:
  1) In the Name field, type a new Task name.
  2) In the Description field (optional), type a brief description about the Task.

Special characters and punctuation are not permitted in names or descriptions.

  3) Use the browse button ... to assign a custom icon.
  4) Click **OK**.

Saving a Task

1 Click **SAVE**. The Save Task window appears.



The Save Task window

2 On the Save Task window, do the following:

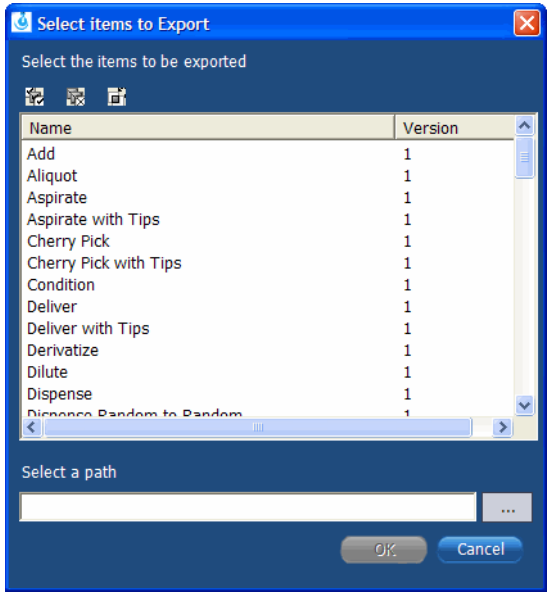
a) In the Name field, type a unique Task name.

b) In the Description field (optional), type a brief description of the Task.

c) In the Custom Icon field (optional), use the browse button ... to assign a custom icon.

Exporting Tasks

1 On the Task Builder, click **EXPORT**. The Select items to Export window displays.



The Select items to Export window

2 In the Select items to Export window, complete the following:

a) In the Select the items to be exported field, select the Task(s).

	To select multiple Tasks in a sequential order, hold SHIFT + any arrow key simultaneously. **To select Tasks in a random order, hold CTRL and select multiple Tasks with the mouse.** **To select all Tasks, click .** **To clear all selected Tasks, click .** **To invert the selection of Tasks, click .**

b) In the Select a path field, complete the following:

1) Click . The Browse For Folder window displays.

2) On the Browse For Folder window, select a folder and click **OK.**

3 Click **OK**. On completion of the Export operation, the Task is saved in the specified folder with a .LHTE extension. The TRILUTION information dialog box displays.

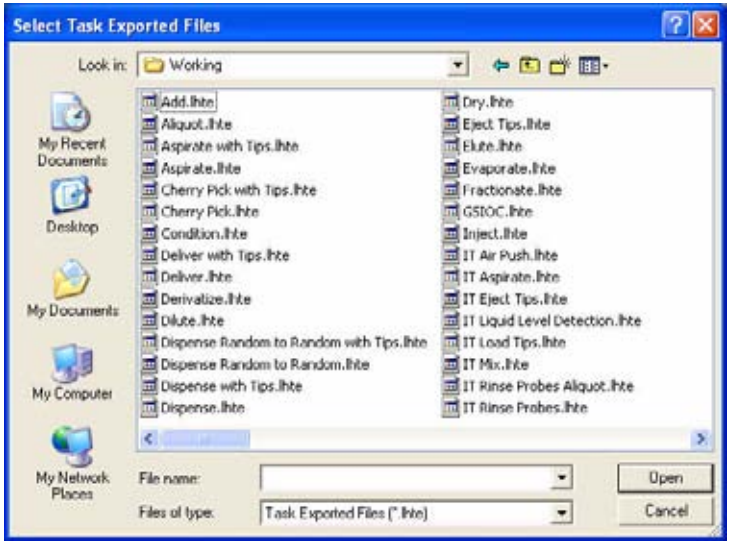
	If a Task(s) with the same name is found in the Export path, an option is provided to rename or overwrite the Task or to skip the Export operation for that Task.

a) On the TRILUTION information dialog box, do the following:

- To view the Export operation log information, click **DETAILS.**
- Click **OK**.

Importing Tasks

1 In the Task Builder, click **IMPORT**. The Select Task Exported Files window displays.



The Select Task Exported Files window

2 From the Select Task Exported Files window, complete the following:

a) Browse for and select the Task Exported file(s).

To select multiple Tasks in a sequential order, hold SHIFT + any arrow key simultaneously.

To select Tasks in a random order, hold CTRL and select multiple Tasks with the mouse.

b) Click **OPEN**. On completion of the Import operation, the TRILUTION information box displays.

If a Task(s) or any Task(s) placed within a Task with the same name is found, an option is provided to rename, use the existing file, or skip the Import operation for that Task.

c) On the TRILUTION information dialog box, complete the following:

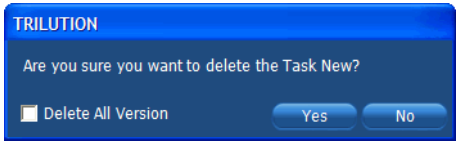
- To view import operation log information, click **DETAILS**.
- Click **OK**.

Deleting Tasks

1 On the Tasks palette, do one of the following:

- Select a Task and right-click to view the submenu. On the submenu, click **DELETE**.
- Open a Task and on the action bar, click **DELETE**. A delete confirmation dialog box displays.

	Gilson-supplied tasks cannot be deleted.



The Delete Task dialog box

2 On the delete confirmation dialog box, choose whether to delete only the current version or all versions of the Task. The default is to delete only the current version of the Task. To delete all versions of the Task, select the Delete All Version check box.

3 Click **YES**. The Task is deleted.

Closing the Task Builder

Close Open Tasks

To close the Task that is open in the workspace, click **CLOSE**.

Close All Open Tasks

To close all open Tasks, but leave the Task Builder open, click **CLOSE ALL**.

Close the Task Builder

To close the Task Builder, click on the upper right corner of the Task Builder.

Method Builder 3

To begin creating a Method, select **METHOD BUILDER** from the Liquid Handling menu.

Method Builder

Using the options in the Method Builder, you specify the Configuration, a Bed Layout, and method conditions for controlling instruments.

Action Buttons

The following action buttons are located in the lower left corner of the Method Builder.

Action Button	*Description*
NEW	Create a new Method.
OPEN	Open an existing Method.
SAVE	Save an existing Method to the same name. Optionally, modify the Configuration, Bed Layout Name, or Error Name and specify the Configuration or Error Name as default.
SAVE AS	Save a new Method or save an existing Method to a new name. Optionally, type a description or modify the Configuration, Bed Layout Name, or Error Name and specify the Configuration or Error Name as default.
MODIFY	Modify the description for the Method.

Action Button	*Description*
DELETE	Deletes the open Method or all versions of the Method.
EXPORT	Exports the Method to a specified location as a .LHME file.
IMPORT	Imports a .LHME file and lists the Method in the Methods palette and replaces it in the Application.
REFRESH	Allows you to reload the Tasks palette with any new Tasks created. It basically allows you to update the builder with the latest Tasks. It also allows you to update any changes to the unit settings. Refresh after deleting and before adding new instruments.
RUN	Launches the Application.

Configuration Tab

For details about this tab and how to create a Configuration, see ***Chapter 4, Method Builder - Configuration***.

Bed Layout Tab

For details about this tab and how to create a Bed Layout, see ***Chapter 5, Method Builder - Bed Layout***.

Method Tab

For details about this tab and how to add steps to a Method, see ***Chapter 6, Method Builder - Method***.

Error Handling Tab

For details about this tab, see ***Chapter 7, Method Builder - Error Handling***.

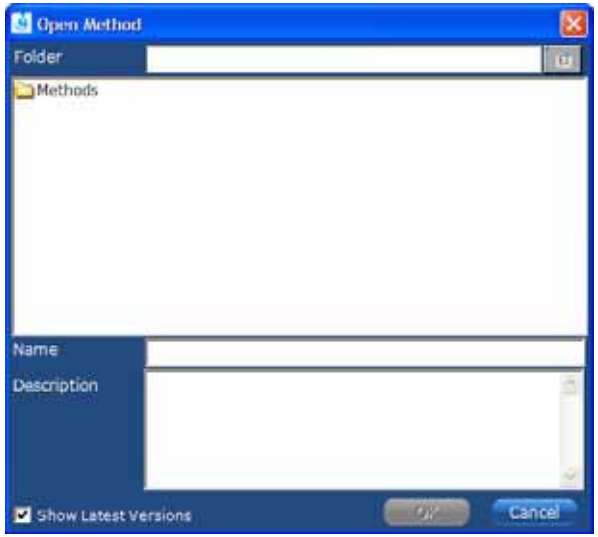
Viewing a Method

1 On the Method Builder, do one of the following:

a) On the Methods palette, do one of the following:

- Double-click a Method.
- Right-click on a Method and then on the submenu displayed, click **OPEN METHOD**.

b) Click **OPEN**. The Open Method window displays.



The Open Method Window

2 On the Open Method window, select a Method and click **OK**. The Method displays in the workspace.

Saving a Method

1 Click **SAVE**. The Save Method window appears.

The Save Method window

2 On the Save Method window, do the following:

a) In the Name field, type a unique Method name.

b) In the Configuration Name field, type a Configuration Name. Optionally, select the Set as Default check box to set this Configuration as the default for all new Methods.

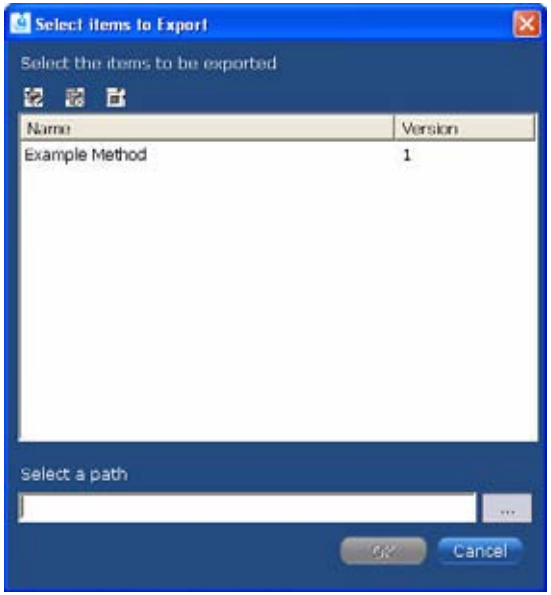
c) In the Bed Layout Name field, type a Bed Layout Name. If the Configuration was set as default, this will be the default Bed Layout associated with that Configuration.

d) In the Error Name field, type a name for the error handling parameters. Optionally, select the Set as Default check box to set these parameters as the default for all new Methods.

e) In the Description field, (optional), type a brief description of the Method.

Exporting Methods

1 On the Method Builder, click **EXPORT**. The Select items to Export window displays all the available Methods.



The Select items to Export window

2 In the Select items to Export window, complete the following:

a) In the Select the items to be exported field, select the Method(s).

To select multiple Methods in a sequential order, hold SHIFT + any arrow key simultaneously.

To select Methods in a random order, hold CTRL and select multiple Methods with the mouse.

b) In the Select a path field, complete the following:

1) Click ... . The *Browse For Folder* window displays.

2) On the Browse For Folder window, select a folder and then click **OK.**

3 Click **OK**. On completion of the Export operation, the Method is saved in the specified folder with a .LHME extension. The TRILUTION information dialog box displays.

If a Method with the same name is found in the export path, an option is provided to rename or overwrite the Method or to skip the export operation for that Method only.

TRILUTION
Export operation is completed. See 'Details' for more information.
OK
Details
The method Example Method Version 1 has been exported successfully.

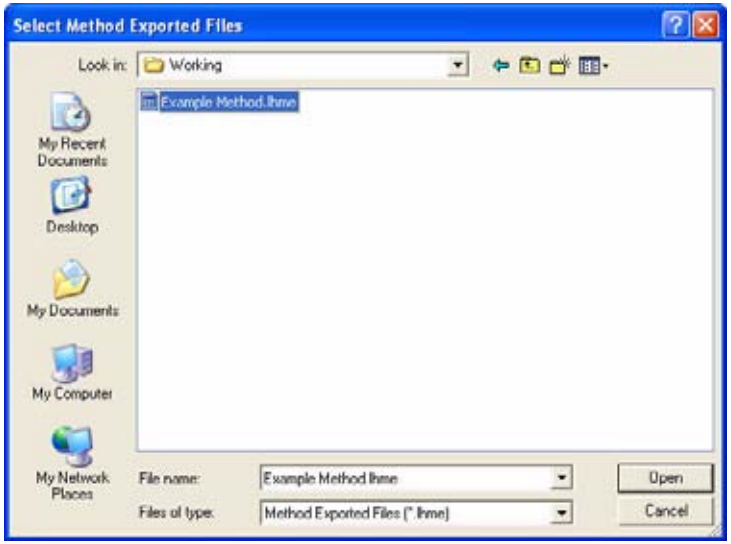
The TRILUTION information dialog box

c) On the TRILUTION information dialog box, complete the following:

- To view the log information of the Export operation, click **DETAILS**.
- Click **OK**.

Importing Methods

1 On the Method Builder, click **IMPORT**. The Select Method Exported Files window displays.



The Select Method Exported Files window

2 On the Select Method Exported Files window, complete the following:

a) Browse for and select the Method Export file(s).

	To select multiple Methods in a sequential order, hold SHIFT + any arrow key simultaneously. **To select Methods in a random order, hold CTRL and select multiple Methods with the mouse.**

b) Click **OPEN**. Some or all of the following dialogs will appear:

- A dialog appears with options for importing the Tasks in the Method. Indicate whether to import the task as a new version, rename the task, import all tasks as new versions, or skip the import of all tasks.
- A dialog appears with options for importing the Method. Indicate whether to import the Method as a new version, rename the Method, or import all Methods as new versions.
- A dialog appears with options for importing the Configuration, Bed Layout, and Error Handler. Indicate whether to rename each component, overwrite the existing components, or overwrite the existing components for all imported Methods.
- A dialog appears with an option to select a folder to save the Method to or select a folder to which all imported Methods will save. A new folder can be created from this dialog by clicking **NEW**.

On completion of the Import operation, the TRILUTION information box displays.

TRILUTION
Import operation is completed. See 'Details' for more information.
OK
Details
The task GSIOC has been skipped during import.
The method Example Method has been successfully imported as a new version.

The TRILUTION information dialog box

c) On the TRILUTION information dialog box, complete the following:

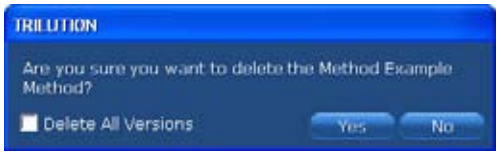
- To view the log information of the Import operation, click **DETAILS**.
- Click **OK**.

Deleting Methods

1 On the Methods palette, do one of the following:

- Select a Method and then right-click to view the submenu. On the submenu, click **DELETE**.
- Open a Method and on the action bar, click **DELETE**.

A Delete confirmation dialog box displays.



The Delete confirmation dialog box

2 On the Delete confirmation dialog box, do one of the following:

- Click **YES**. The Method is deleted.
- Select the Delete All Versions check box and then click **YES**. All versions of the Method are deleted.

Closing the Method Builder

On the Method Builder, do one of the following:

- Click ( ) on the lower right corner of the Method Builder to exit and return to the TRILUTION menu.
- Click ( ) on the upper right corner of the Method Builder to close the builder.

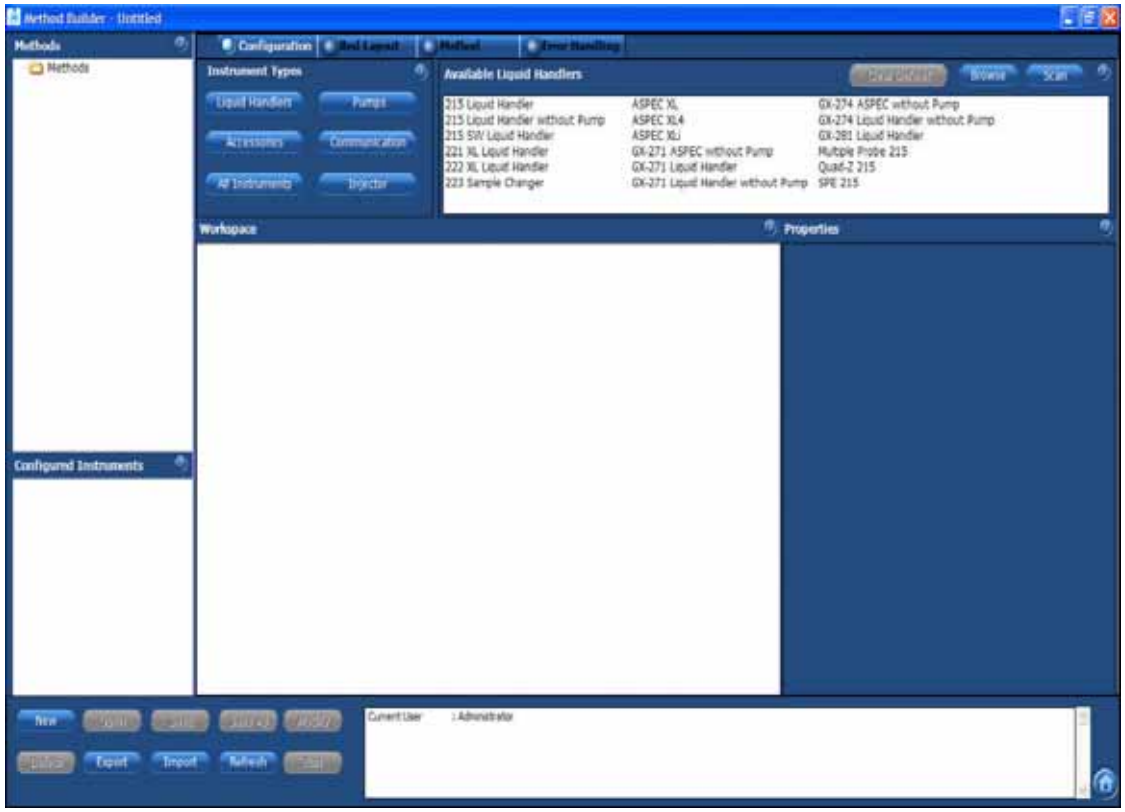
Method Builder - Configuration 4

A Configuration consists of a group of uniquely named instruments. The Configuration is part of a Method.

The drag-and-drop feature enables easy creation of Configurations by dragging an instrument and dropping it into the Workspace.

Configuration Tab Window

The Configuration window is a graphical interface used to create a Configuration.



The Method Builder - Configuration Tab Window

It has the following sections:

Section	*Described on*
Methods Palette	page 4-3
Configured Instruments	page 4-3
Instrument Types	page 4-4
Available Instruments	page 4-4
Workspace	page 4-4
Properties	page 4-4

Methods Palette

This palette lists the Methods created.

Configured Instruments

This palette is used to provide information and also for navigation. Information provided is dependent on the instrument type.

Liquid Handlers. Lists Bed Layout. Can navigate to the Bed Layout tab by clicking the Bed Layout name.

Pumps. Used only for navigation. Click on the instrument name to view the property page for that instrument.

Accessories. Used only for navigation. Click on the instrument name to view the property page for that instrument.

Communication. Used only for navigation. Click on the instrument name to view the property page for that instrument.

Injector. Used only for navigation. Click on the instrument name to view the property page for that instrument.

Instrument Types

Lists the available instrument groups.

Available Instruments

Lists the instruments of the selected instrument group or those identified during the scan.

Workspace

Area used to create or view a Configuration.

Properties

Area used to view and/or edit instrument properties.

Creating a Configuration

To create a Configuration

1 Do one of the following:

- From the Instrument Types, select an instrument group (Liquid Handlers, Pumps, Accessories, Communication, Injector, or All Instruments). Available instruments for the selected Instrument Type are listed in the Available Instruments window.
- Click **SCAN**. TRILUTION LH searches for Gilson instruments that are powered ON and are connected to the Gilson Serial Input/Output Channel (GSIOC). Results of the scan and any Ethernet instruments are displayed in the Available Instruments window.
- Click **BROWSE**. Select an existing Configuration and click **OK**.

2 From the Available Instruments window, select an instrument then drag and drop it in the Workspace.

If an instrument with the same GSIOC ID is found, an option is provided to add the instrument with a new GSIOC ID.

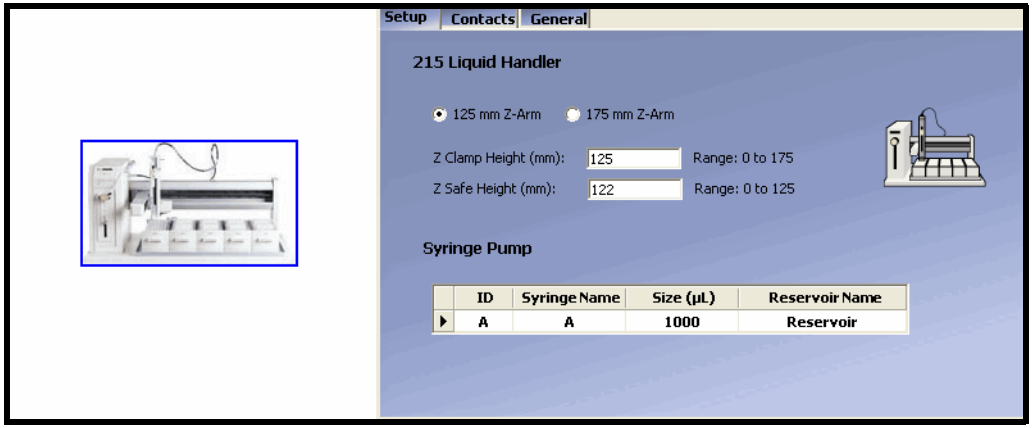
Instrument Properties

Every instrument has a set of properties defined in the Configuration that differ for each instrument.

Instrument Name	*For List of Properties:*
215 Liquid Handler	See page 4-8.
215 Liquid Handler without Pump	See page 4-11.
215 SW Liquid Handler	See page 4-13.
221 XL Liquid Handler	See page 4-15.
222 XL Liquid Handler	See page 4-17.
223 Sample Changer	See page 4-19.
402 Pump Dual	See page 4-21.
402 Pump Dual with Tee	See page 4-23.
402 Pump Single	See page 4-26.
406 Pump Dual	See page 4-28.
406 Pump Single	See page 4-30.
444 QuadDilutor	See page 4-32.
506C System Interface	See page 4-34.
606 GSIOC to RS-232 Converter	See page 4-36.
819 Injection Module	See page 4-39.

Instrument Name	*For List of Properties:*
ASPEC XL	See page 4-40.
ASPEC XL4	See page 4-42.
ASPEC XLi	See page 4-45.
GX-271 ASPEC without Pump	See page 4-47.
GX-271 Liquid Handler	See page 4-51.
GX-271 Liquid Handler without Pump	See page 4-55.
GX-274 ASPEC without Pump	See page 4-59.
GX-274 Liquid Handler without Pump	See page 4-62.
GX-281 Liquid Handler	See page 4-65.
Minipuls 3	See page 4-69.
Multiple Probe 215	See page 4-75.
Quad-Z 215	See page 4-78.
SPE 215	See page 4-81.
VALVEMATE	See page 4-84.
VALVEMATE II	See page 4-86.
Virtual Pumping System	See page 4-88.

215 Liquid Handler



The 215 Liquid Handler Properties Window

Properties

215 Liquid Handler Properties

Property Name	*Brief Description*	*Default Value*	*Range*
Setup - 215 Liquid Handler			
Z Arm Type (mm)	This is the height of the Z-arm installed on the liquid handler.	125 mm Z-Arm	125 mm Z-Arm, 175 mm Z-Arm
Z Clamp Height (mm)	This number corresponds to where the mounting clamp is on the vertical ruler on the installed Z-arm.	125	0–175 Range provided on-screen.

215 Liquid Handler Properties Table *(Page 1 of 3)*

215 Liquid Handler Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Z Safe Height (mm)	The Z-height to which the instrument's probe moves before moving in the X or Y direction.	122	Calculated based on Z Clamp Height and Z Arm Type. Range provided on-screen.
Setup-Syringe Pump			
ID	A unique identifier to address syringes on the instrument.	A	A
Syringe Name	A unique name to address syringes on the instrument.	A	N/A
Size (µL)	The capacity of each installed syringe. For a range of suggested flow rates for this syringe size, see **Flow Rates** on page 4-93.	1000	100, 250, 500, 1000, 5000, 10000, 25000
Reservoir Name	A unique name used to identify the liquid that is flowing through the associated syringe. It is important for sample tracking.	Reservoir	N/A

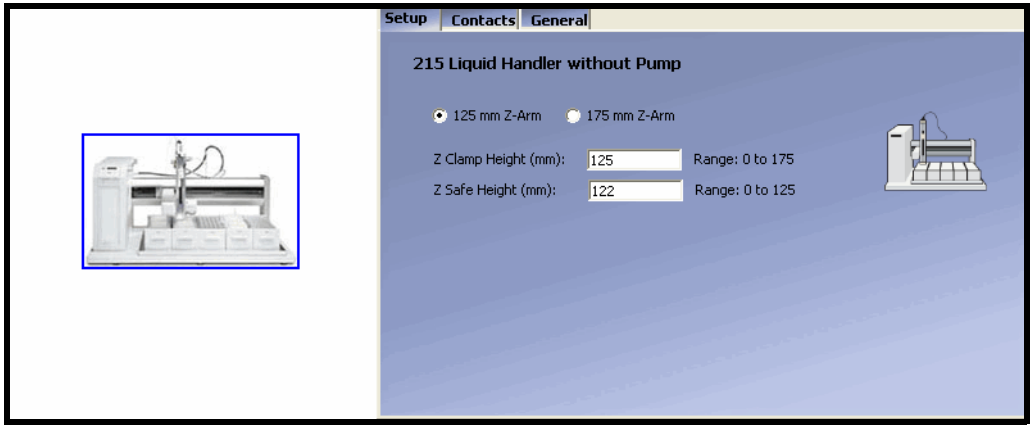
215 Liquid Handler Properties Table *(Page 2 of 3)*

215 Liquid Handler Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Contacts			
24V Output Output 1 Output 2 Output 3 Output 4	Optionally, type a description for the contact. This description will be used to identify the contact in a Task.	N/A	N/A
Input A Input B Input C Input D	Optionally, type a description for the contact. This description will be used to identify the contact in a Task.	N/A	N/A
General			
Instrument Name	The name that will be used to identify this instrument in a Task.	Liquid Handler	N/A
GSIOC ID	A unique numerical address that must be known to the instrument and to the software that allows the software to communicate with the instrument.	22	20–29

215 Liquid Handler Properties Table *(Page 3 of 3)*

215 Liquid Handler without Pump



The 215 Liquid Handler without Pump Properties Window

Properties

215 Liquid Handler without Pump Properties

Property Name	*Brief Description*	*Default Value*	*Range*
Setup			
Z Arm Type (mm)	This is the height of the Z-arm installed on the liquid handler.	125 mm Z-Arm	125 mm Z-Arm, 175 mm Z-Arm
Z Clamp Height (mm)	This number corresponds to where the mounting clamp is on the vertical ruler on the installed Z-arm.	125	0–175 Range provided on-screen.

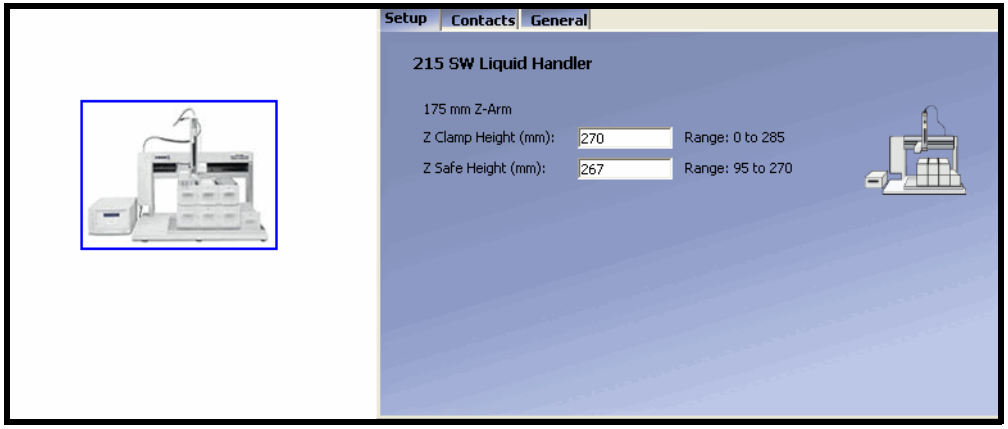
215 Liquid Handler without Pump Properties Table *(Page 1 of 2)*

215 Liquid Handler without Pump Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Z Safe Height (mm)	The Z-height to which the instrument's probe moves before moving in the X or Y direction.	122	Calculated based on Z Clamp Height and Z Arm Type. Range provided on-screen.
Contacts			
24V Output Output 1 Output 2 Output 3 Output 4	Optionally, type a description for the contact. This description will be used to identify the contact in a Task.	N/A	N/A
Input A Input B Input C Input D	Optionally, type a description for the contact. This description will be used to identify the contact in a Task.	N/A	N/A
General			
Instrument Name	The name that will be used to identify this instrument in a Task.	Liquid Handler	N/A
GSIOC ID	A unique numerical address that must be known to the instrument and to the software that allows the software to communicate with the instrument.	22	20–29

215 Liquid Handler without Pump Properties Table *(Page 2 of 2)*

215 SW Liquid Handler



The 215 SW Liquid Handler Properties Window

Properties

215 SW Liquid Handler Properties

Property Name	*Brief Description*	*Default Value*	*Range*
Setup			
Z Clamp Height (mm)	This number corresponds to where the mounting clamp is on the vertical ruler on the installed Z-arm.	270	0–285
Z Safe Height (mm)	The Z-height to which the instrument's probe moves before moving in the X or Y direction.	267	Calculated based on Z Clamp Height. Range provided on-screen.

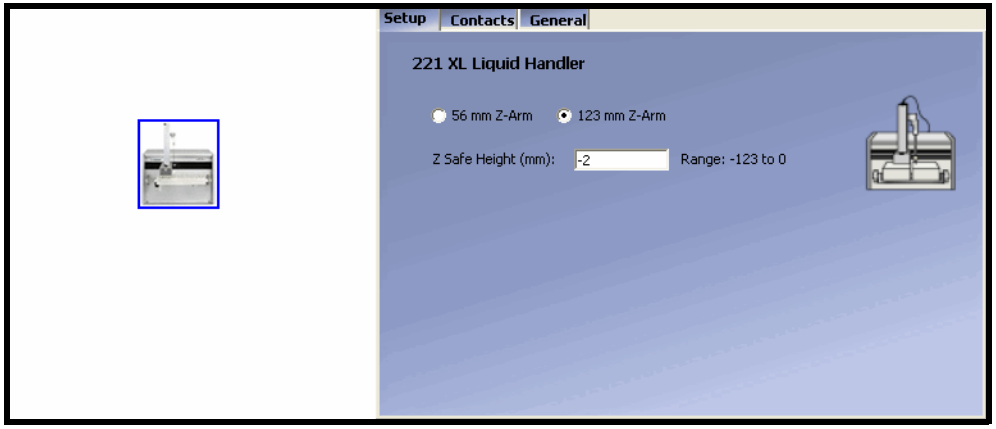
215 SW Liquid Handler Properties Table *(Page 1 of 2)*

215 SW Liquid Handler Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Contacts			
24V Output Output 1 Output 2 Output 3 Output 4	Optionally, type a description for the contact. This description will be used to identify the contact in a Task.	N/A	N/A
Input A Input B Input C Input D	Optionally, type a description for the contact. This description will be used to identify the contact in a Task.	N/A	N/A
General			
Instrument Name	The name that will be used to identify this instrument in a Task.	Liquid Handler	N/A
GSIOC ID	A unique numerical address that must be known to the instrument and to the software that allows the software to communicate with the instrument.	22	20–29

215 SW Liquid Handler Properties Table *(Page 2 of 2)*

221 XL Liquid Handler



The 221 XL Liquid Handler Properties Window

Properties

221 XL Liquid Handler Properties

Property Name	*Brief Description*	*Default Value*	*Range*
Setup			
Z Arm Type (mm)	This is the height of the Z-arm installed on the liquid handler.	123 mm Z-Arm	56 mm Z-Arm, 123 mm Z-Arm
Z Safe Height (mm)	The Z-height to which the instrument's probe moves before moving in the X or Y direction.	-2	Calculated based on Z Clamp Height and Z Arm Type. Range provided on-screen.

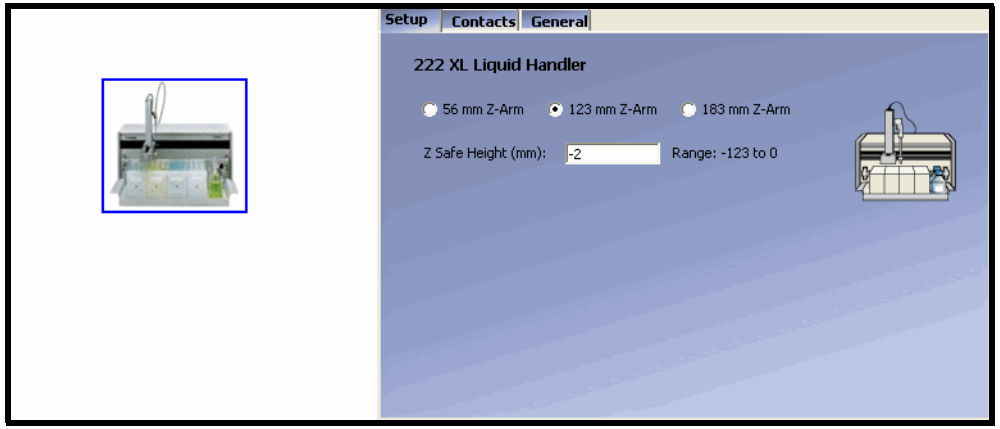
221 XL Liquid Handler Properties Table *(Page 1 of 2)*

221 XL Liquid Handler Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Contacts			
Relay Output 1 Relay Output 2 Relay Output 3 Output 4 Output 5 Output 6 Output 7 Output 8	Optionally, type a description for the contact. This description will be used to identify the contact in a Task.	N/A	N/A
Analog Input Input 1 Input 2 Input 3 Input 4	Optionally, type a description for the contact. This description will be used to identify the contact in a Task.	N/A	N/A
General			
Instrument Name	The name that will be used to identify this instrument in a Task.	Liquid Handler	N/A
GSIOC ID	A unique numerical address that must be known to the instrument and to the software that allows the software to communicate with the instrument.	10	0–31

221 XL Liquid Handler Properties Table *(Page 2 of 2)*

222 XL Liquid Handler



The 222 XL Liquid Handler Properties Window

Properties

222 XL Liquid Handler Properties

Property Name	*Brief Description*	*Default Value*	*Range*
Setup			
Z Arm Type (mm)	This is the height of the Z-arm installed on the liquid handler.	123 mm Z-Arm	56 mm Z-Arm, 123 mm Z-Arm, 183 mm Z-Arm
Z Safe Height (mm)	The Z-height to which the instrument's probe moves before moving in the X or Y direction.	-2	Calculated based on Z Clamp Height and Z Arm Type. Range provided on-screen.

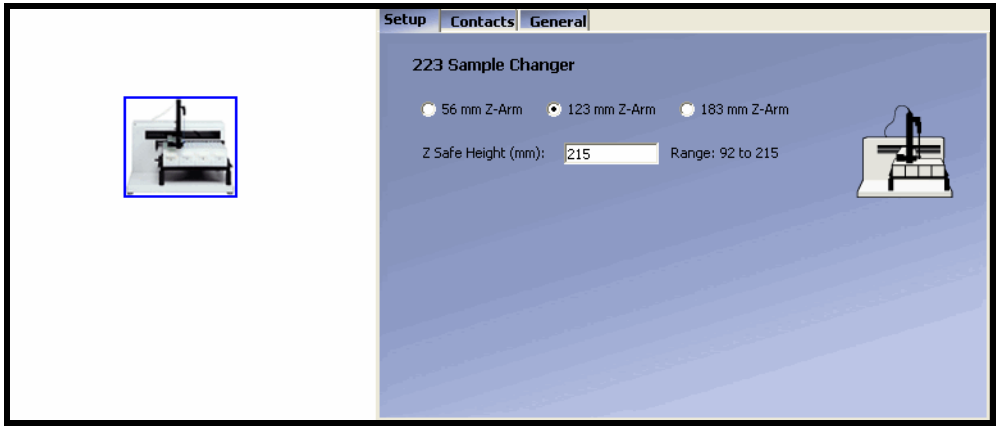
222 XL Liquid Handler Properties Table *(Page 1 of 2)*

222 XL Liquid Handler Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Contacts			
Relay Output 1 Relay Output 2 Relay Output 3 Output 4 Output 5 Output 6 Output 7 Output 8	Optionally, type a description for the contact. This description will be used to identify the contact in a Task.	N/A	N/A
Analog Input Input 1 Input 2 Input 3 Input 4	Optionally, type a description for the contact. This description will be used to identify the contact in a Task.	N/A	N/A
General			
Instrument Name	The name that will be used to identify this instrument in a Task.	Liquid Handler	N/A
GSIOC ID	A unique numerical address that must be known to the instrument and to the software that allows the software to communicate with the instrument.	10	0–31

222 XL Liquid Handler Properties Table *(Page 2 of 2)*

223 Sample Changer



The 223 Sample Changer Properties Window

Properties

223 Sample Changer Properties

Property Name	*Brief Description*	*Default Value*	*Range*
Setup			
Z Arm Type (mm)	This is the height of the Z-arm installed on the liquid handler.	123 mm Z-Arm	56 mm Z-Arm, 123 mm Z-Arm, 183 mm Z-Arm
Z Safe Height (mm)	The Z-height to which the instrument's probe moves before moving in the X or Y direction.	215	Calculated based on Z Clamp Height and Z Arm Type. Range provided on-screen.

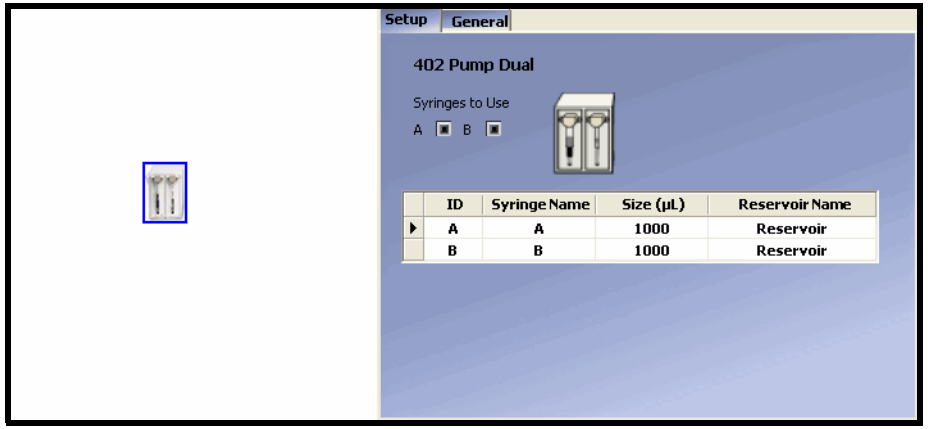
223 Sample Changer Properties Table *(Page 1 of 2)*

223 Sample Changer Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Contacts			
24V Output Output 1 Output 2 Output 3 Output 4	Optionally, type a description for the contact. This description will be used to identify the contact in a Task.	N/A	N/A
Input A Input B Input C Input D	Optionally, type a description for the contact. This description will be used to identify the contact in a Task.	N/A	N/A
General			
Instrument Name	The name that will be used to identify this instrument in a Task.	Liquid Handler	N/A
GSIOC ID	A unique numerical address that must be known to the instrument and to the software that allows the software to communicate with the instrument.	10	10–19

223 Sample Changer Properties Table *(Page 2 of 2)*

402 Pump Dual



The 402 Pump Dual Properties Window

Properties

402 Pump Dual Properties

Property Name	*Brief Description*	*Default Value*	*Range*
Setup			
Syringes to Use	The syringes that will be used when this instrument is selected as the Pump in a Task.	A, B	A, B
ID	A unique identifier to address syringes on the instrument.	A, B	A, B

402 Pump Dual Properties Table *(Page 1 of 2)*

402 Pump Dual Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Syringe Name	A unique name to address syringes on the instrument.	A, B	N/A
Size (µL)	The capacity of each installed syringe. For a range of suggested flow rates for this syringe size, see **Flow Rates** on page 4-93.	1000	100, 250, 500, 1000, 5000, 10000, 25000
Reservoir Name	A unique name used to identify the liquid that is flowing through the associated syringe. It is important for sample tracking.	Reservoir	N/A
General			
Instrument Name	The name that will be used to identify this instrument in a Task.	Pump	N/A
GSIOC ID	A unique numerical address that must be known to the instrument and to the software that allows the software to communicate to the instrument.	0	0–31

402 Pump Dual Properties Table *(Page 2 of 2)*

402 Pump Dual with Tee

The 402 Dual with Tee is a uniquely designed syringe pump that allows for two different syringe sizes to function as one syringe pump.

For the syringe pump to function properly, the following will be true:

- The left syringe capacity is greater than the right syringe capacity.

The following describes how the syringes work together:

ASPIRATE (TRAY)

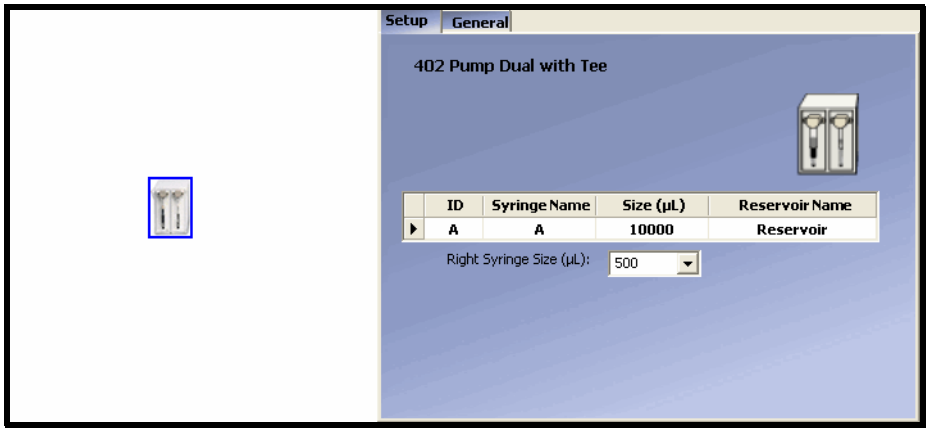
- The valve must be in the probe position.
- The right syringe will be used if the requested volume is less than 95% of the right syringe capacity. Held volume is considered.
- The left syringe will be used if the requested volume is 95% or greater than the right syringe capacity.

ASPIRATE (RESERVOIR)

- The valve must be in the reservoir position
- The left syringe will be used.

DISPENSE

- The right syringe will be used if the requested volume is less than 95% of the right syringe capacity. Held volume is considered.
- The left syringe will be used if the requested volume is 95% or greater than the right syringe capacity.



The 402 Pump Dual with Tee Properties Window

Properties

402 Pump Dual with Tee Properties

Property Name	*Brief Description*	*Default Value*	*Range*
Setup			
ID	A unique identifier to address syringes on the instrument.	A	A

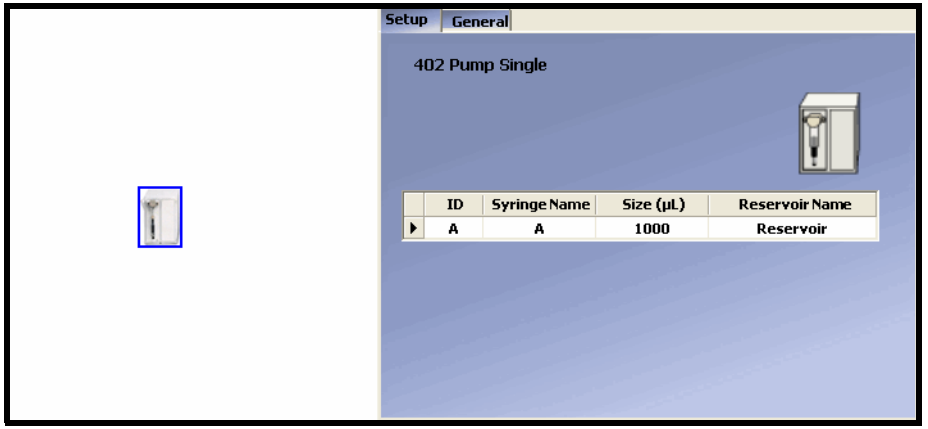
402 Pump Dual with Tee Properties Table *(Page 1 of 2)*

402 Pump Dual with Tee Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Syringe Name	A unique name to address syringes on the instrument.	A	N/A
Size (µL)	The capacity of the left syringe (A). For a range of suggested flow rates for this syringe size, see **Flow Rates** on page 4-93.	10000	100, 250, 500, 1000, 5000, 10000, 25000
Reservoir Name	A unique name used to identify the liquid that is flowing through the associated syringe. It is important for sample tracking.	Reservoir	N/A
Right Syringe Size (µL)	The capacity of the right syringe (B). For a range of suggested flow rates for this syringe size, see **Flow Rates** on page 4-93.	500	100, 250, 500, 1000, 5000, 10000, 25000
General			
Instrument Name	The name that will be used to identify this instrument in a Task.	Pump	N/A
GSIOC ID	A unique numerical address that must be known to the instrument and to the software that allows the software to communicate to the instrument.	0	0–31

402 Pump Dual with Tee Properties Table *(Page 2 of 2)*

402 Pump Single



The 402 Pump Single Properties Window

Properties

402 Pump Single Properties

Property Name	*Brief Description*	*Default Value*	*Range*
Setup			
ID	A unique identifier to address syringe on the instrument.	A	A
Syringe Name	A unique name to address syringe on the instrument.	A	N/A

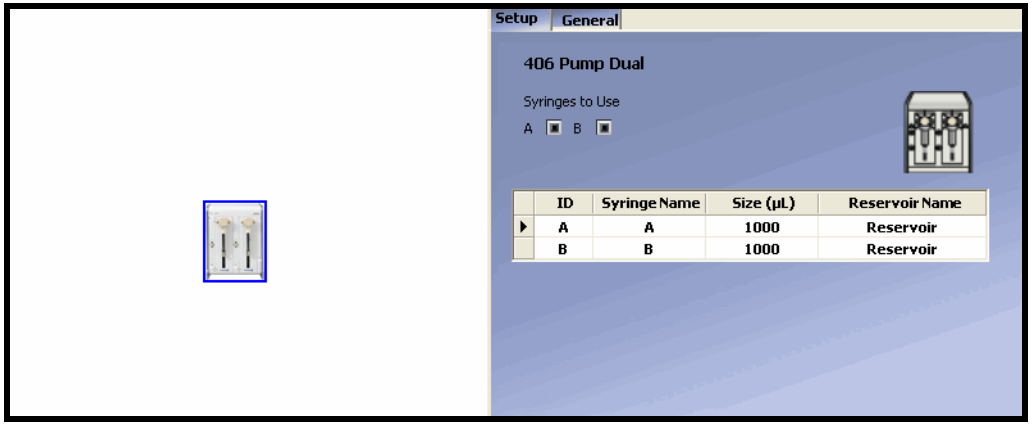
402 Pump Single Properties Table *(Page 1 of 2)*

402 Pump Single Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Size (µL)	The capacity of the left syringe (A). For a range of suggested flow rates for this syringe size, see **Flow Rates** on page 4-93.	1000	100, 250, 500, 1000, 5000, 10000, 25000
Reservoir Name	A unique name used to identify the liquid that is flowing through the associated syringe. It is important for sample tracking.	Reservoir	N/A
General			
Instrument Name	The name that will be used to identify this instrument in a Task.	Pump	N/A
GSIOC ID	A unique numerical address that must be known to the instrument and to the software that allows the software to communicate to the instrument.	0	0–31

402 Pump Single Properties Table *(Page 2 of 2)*

406 Pump Dual



The 406 Pump Dual Properties Window

Properties

406 Pump Dual Properties

Property Name	*Brief Description*	*Default Value*	*Range*
Setup			
Syringes to Use	The syringes that will be used when this instrument is selected as the Pump in a Task.	A, B	A, B
ID	A unique identifier to address syringes on the instrument.	A, B	A, B

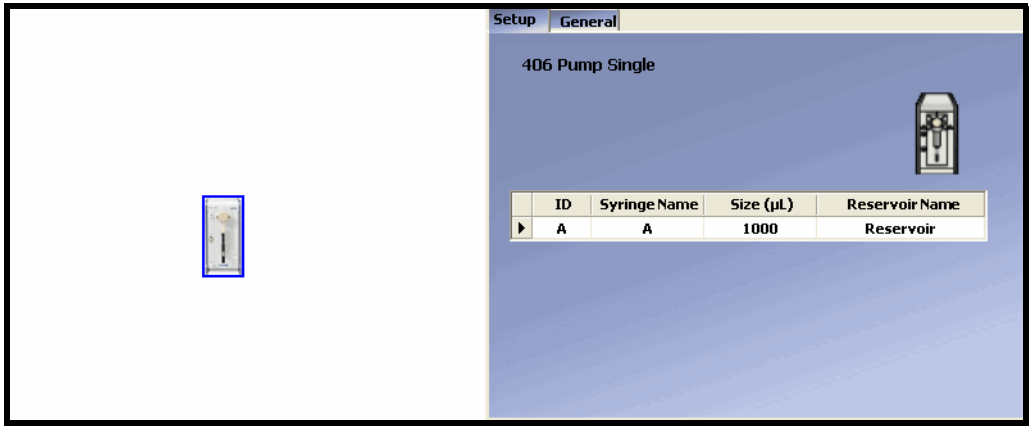
406 Pump Dual Properties Table *(Page 1 of 2)*

406 Pump Dual Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Syringe Name	A unique name to address syringes on the instrument.	A, B	N/A
Size (µL)	The capacity of the installed syringe. For a range of suggested flow rates for this syringe size, see **Flow Rates** on page 4-93.	10000	100, 250, 500, 1000, 5000, 10000, 25000
Reservoir Name	A unique name used to identify the liquid that is flowing through the associated syringe. It is important for sample tracking.	Reservoir	N/A
General			
Instrument Name	The name that will be used to identify this instrument in a Task.	Pump	N/A
Pump Serial Number	The serial number of the pump. The serial number is located on the rear panel and near the bottom of the instrument.	N/A	N/A

406 Pump Dual Properties Table *(Page 2 of 2)*

406 Pump Single



The 406 Pump Single Properties Window

Properties

406 Pump Single Properties

Property Name	*Brief Description*	*Default Value*	*Range*
Setup			
ID	A unique identifier to address syringe on the instrument.	A	A
Syringe Name	A unique name to address syringe on the instrument.	A	N/A

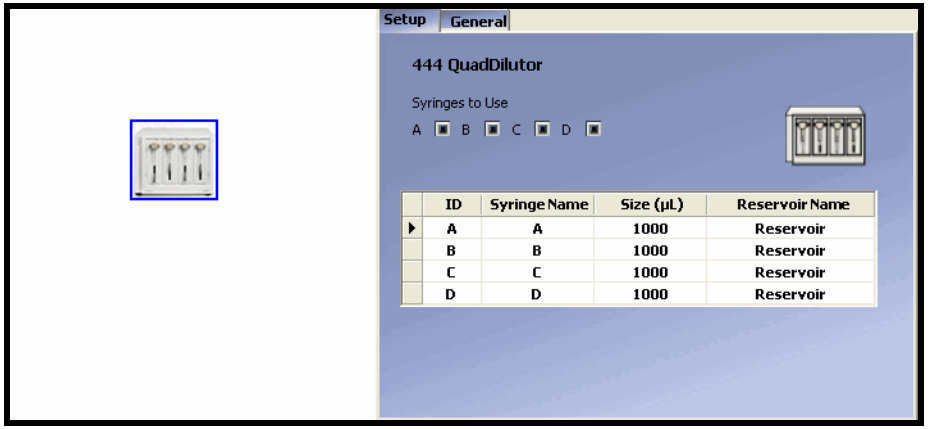
406 Pump Single Properties Table *(Page 1 of 2)*

406 Pump Single Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Size (µL)	The capacity of each installed syringe. For a range of suggested flow rates for this syringe size, see **Flow Rates** on page 4-93.	10000	100, 250, 500, 1000, 5000, 10000, 25000
Reservoir Name	A unique name used to identify the liquid that is flowing through the associated syringe. It is important for sample tracking.	Reservoir	N/A
General			
Instrument Name	The name that will be used to identify this instrument in a Task.	Pump	N/A
Pump Serial Number	The serial number of the pump. The serial number is located on the rear panel and near the bottom of the instrument.	N/A	N/A

406 Pump Single Properties Table *(Page 2 of 2)*

444 QuadDilutor



The 444 QuadDilutor Properties Window

Properties

444 QuadDilutor Properties

Property Name	*Brief Description*	*Default Value*	*Range*
Setup			
Syringes to Use	The syringes that will be used when this instrument is selected as the Pump in a Task.	A, B, C, D	A, B, C, D
ID	A unique identifier to address syringes on the instrument.	A, B, C, D	A, B, C, D

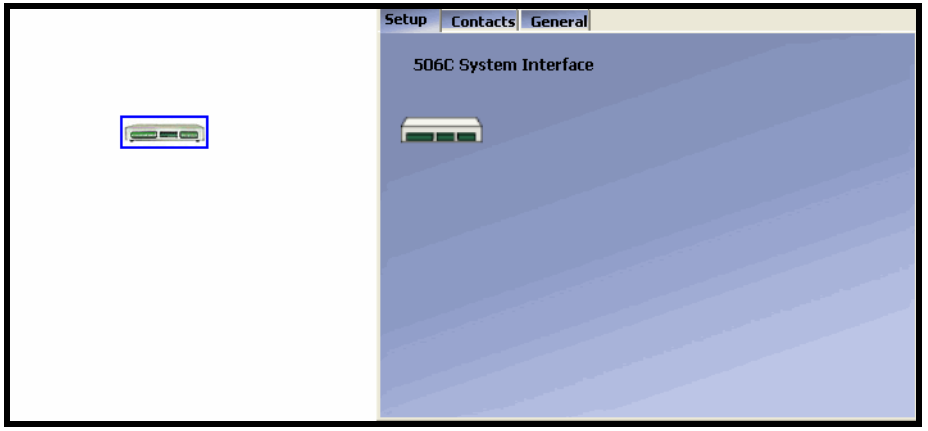
444 QuadDilutor Properties Table *(Page 1 of 2)*

444 QuadDilutor Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Syringe Name	A unique name to address syringes on the instrument.	A, B, C, D	N/A
Size (µL)	The capacity of each installed syringe. For a range of suggested flow rates for this syringe size, see **Flow Rates** on page 4-93.	1000	100, 250, 500, 1000, 5000, 10000, 25000
Reservoir Name	A unique name used to identify the liquid that is flowing through the associated syringe. It is important for sample tracking.	Reservoir	N/A
General			
Instrument Name	The name that will be used to identify this instrument in a Task.	Pump	N/A
GSIOC ID	A unique numerical address that must be known to the instrument and to the software that allows the software to communicate to the instrument.	0	0–31

444 QuadDilutor Properties Table *(Page 2 of 2)*

506C System Interface



The 506C System Interface Properties Window

Properties

506C System Interface Properties

Property Name	*Brief Description*	*Default Value*	*Range*
Contacts			
Output 1 Output 2 Output 3 Output 4 Output 5 Output 6	Optionally, type a description for the contact. This description will be used to identify the contact in a Task.	N/A	N/A

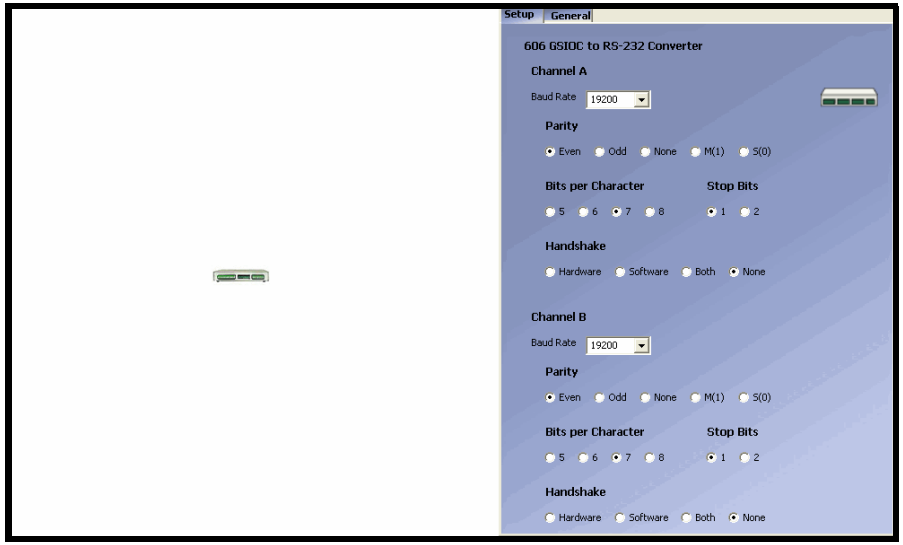
506C System Interface Properties Table *(Page 1 of 2)*

506C System Interface Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Input A Input B Input C Input D Analog Input A Analog Input B Analog Input C Analog Input D	Optionally, type a description for the contact. This description will be used to identify the contact in a Task.	N/A	N/A
General			
Instrument Name	The name that will be used to identify this instrument in a Task.	Contact	N/A
GSIOC ID	A unique numerical address that must be known to the instrument and to the software that allows the software to communicate to the instrument.	63	0–63

506C System Interface Properties Table *(Page 2 of 2)*

606 GSIOC to RS-232 Converter



The 606 GSIOC to RS-232 Converter Properties Window

Properties

606 GSIOC to RS-232 Converter Properties

Property Name	*Brief Description*	*Default Value*	*Range*
Setup - Channel A			
Baud Rate	The speed at which information is sent.	19200	75, 110, 150, 300, 600, 1200, 1800, 2000, 2400, 4800, 9600, 19200, 38400
Parity	The number of 1s in the group of bits.	Even	Even, Odd, None, M(1), S(0)

606 GSIOC to RS-232 Converter Properties Table *(Page 1 of 3)*

606 GSIOC to RS-232 Converter Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Bits per Character	The number of binary digits that constitutes a character.	7	5, 6, 7, 8
Stop Bits	The number of bits to be transmitted after each character.	1	1, 2
Handshake	The device with which information is being transmitted or exchanged.	None	Hardware, Software, Both, None
Setup - Channel B			
Baud Rate	The speed at which information is sent.	19200	75, 110, 150, 300, 600, 1200, 1800, 2000, 2400, 4800, 9600, 19200, 38400
Parity	The number of 1s in the group of bits.	Even	Even, Odd, None, M(1), S(0)
Bits per Character	The number of binary digits that constitutes a character.	7	5, 6, 7, 8
Stop Bits	The number of bits to be transmitted after each character.	1	1, 2
Handshake	The device with which information is being transmitted or exchanged.	None	Hardware, Software, Both, None

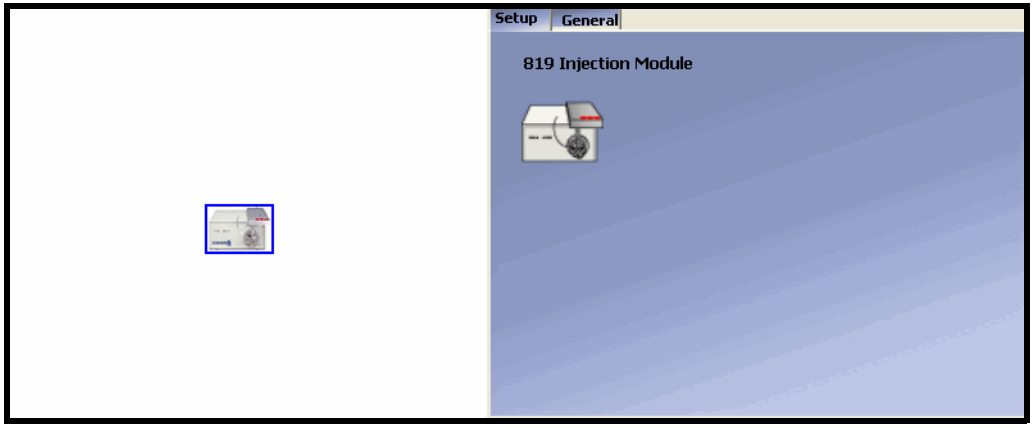
606 GSIOC to RS-232 Converter Properties Table *(Page 2 of 3)*

606 GSIOC to RS-232 Converter Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
General			
Instrument Name	The name that will be used to identify this instrument in a Task.	Communication	N/A
GSIOC ID	A unique numerical address that must be known to the instrument and to the software that allows the software to communicate to the instrument.	61	0–63

606 GSIOC to RS-232 Converter Properties Table *(Page 3 of 3)*

819 Injection Module



819 Injection Module Properties Window

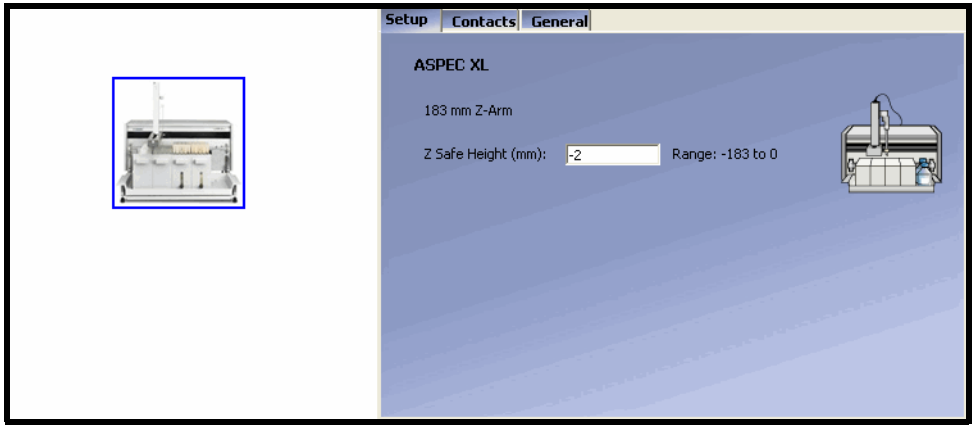
Properties

819 Injection Module Properties

Property Name	*Brief Description*	*Default Value*	*Range*
Injection Module Name	The name that will be used to identify this instrument in a Task.	Injector	N/A
GSIOC ID	A unique numerical address that must be known to the instrument and to the software that allows the software to communicate with the instrument.	29	20–29

819 Injection Module Properties

ASPEC XL



The ASPEC XL Properties Window

Properties

ASPEC XL Properties

Property Name	*Brief Description*	*Default Value*	*Range*
Setup			
Z Safe Height (mm)	The Z-height at which the instrument's probe moves to before moving in the X or Y direction.	0	-183 to 0

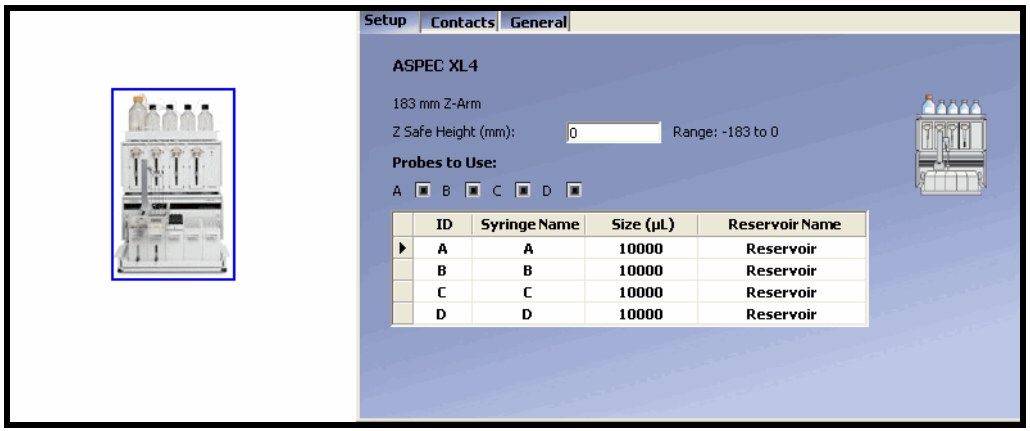
ASPEC XL Properties Table *(Page 1 of 2)*

ASPEC XL Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Contacts			
Relay Output 1 Relay Output 2 Relay Output 3 Output 4 Output 5 Output 6 Output 7 Output 8	Optionally, type a description for the contact. This description will be used to identify the contact in a Task.	N/A	N/A
Analog Input Input 1 Input 2 Input 3 Input 4	Optionally, type a description for the contact. This description will be used to identify the contact in a Task.	N/A	N/A
General			
Instrument Name	The name that will be used to identify this instrument in a Task.	Liquid Handler	N/A
GSIOC ID	A unique numerical address that must be known to the instrument and to the software that allows the software to communicate to the instrument.	10	0–31

ASPEC XL Properties Table *(Page 2 of 2)*

ASPEC XL4



The ASPEC XL4 Properties Window

Properties

ASPEC XL4 Properties

Property Name	*Brief Description*	*Default Value*	*Range*
Setup			
Z Safe Height (mm)	The Z-height at which the instrument's probe moves to before moving in the X or Y direction.	0	-183 to 0
Probes to Use	The probes and syringes that will be used when this instrument is selected as the Liquid Handler and Pump in a Task.	A, B, C, D	A, B, C, D

ASPEC XL4 Properties Table *(Page 1 of 3)*

ASPEC XL4 Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
ID	A unique identifier to address syringes on the instrument.	A, B, C, D	A, B, C, D
Syringe Name	A unique name to address syringes on the instrument.	A, B, C, D	N/A
Size (µL)	The capacity of each installed syringe. For a range of suggested flow rates for this syringe size, see **Flow Rates** on page 4-93.	10000	500, 1000, 5000, 10000, 25000
Reservoir Name	A unique name used to identify the liquid that is flowing through the associated syringe. It is important for sample tracking.	Reservoir	N/A
Contacts			
Relay Output 1 Relay Output 2 Relay Output 3 Output 4 Output 5 Output 6 Output 7 Output 8	Optionally, type a description for the contact. This description will be used to identify the contact in a Task.	N/A	N/A

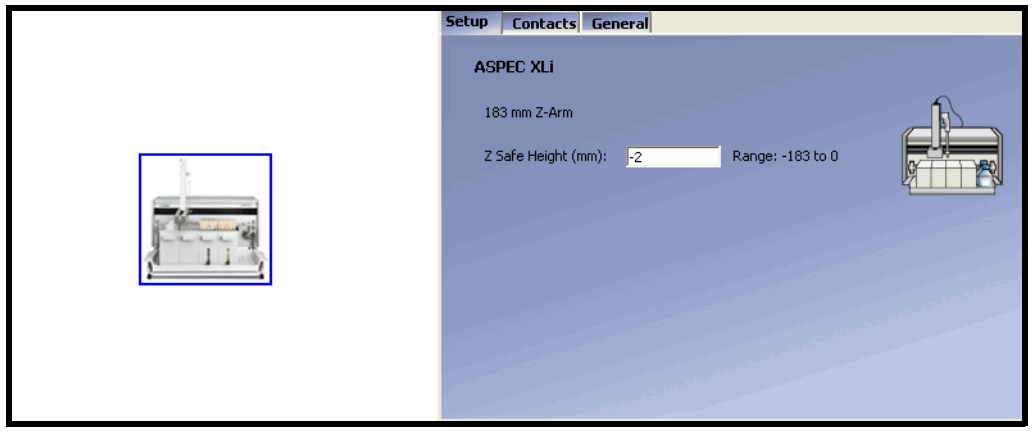
ASPEC XL4 Properties Table *(Page 2 of 3)*

ASPEC XL4 Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Analog Input Input 1 Input 2 Input 3 Input 4	Optionally, type a description for the contact. This description will be used to identify the contact in a Task.	N/A	N/A
General			
Instrument Name	The name that will be used to identify this instrument in a Task.	Liquid Handler	N/A
GSIOC ID	A unique numerical address that must be known to the instrument and to the software that allows the software to communicate to the instrument.	10	0–31

ASPEC XL4 Properties Table *(Page 3 of 3)*

ASPEC XLi



ASPEC XLi Properties Window

Properties

ASPEC XLi Properties

Property Name	*Brief Description*	*Default Value*	*Range*
Setup			
Z Safe Height (mm)	The Z-height to which the instrument's probe moves before moving in the X or Y direction.	0	-183 to 0

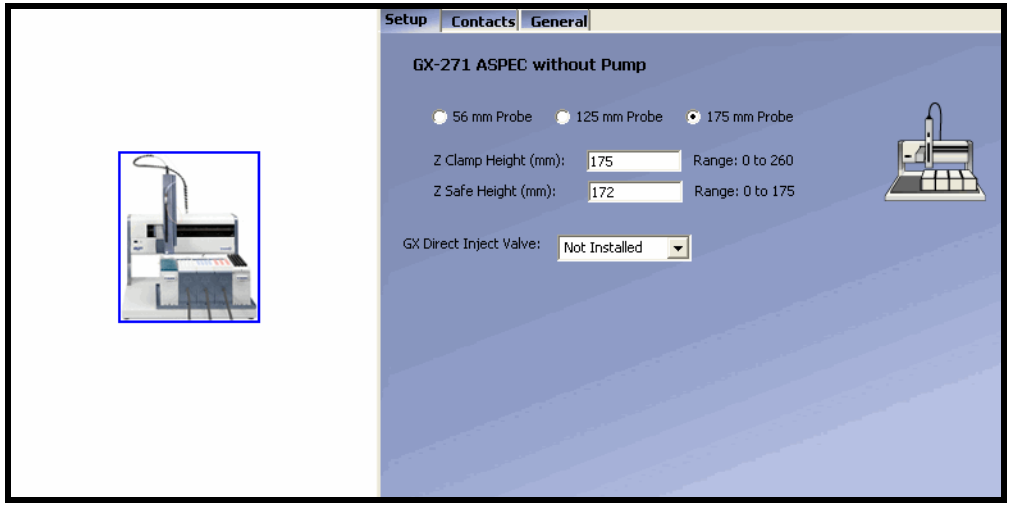
ASPEC XLi Properties Table *(Page 1 of 2)*

ASPEC XLi Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Contacts			
Relay Output 1 Relay Output 2 Relay Output 3 Output 4 Output 5 Output 6 Output 7 Output 8	Optionally, type a description for the contact. This description will be used to identify the contact in a Task.	N/A	N/A
Analog Input Input 1 Input 2 Input 3 Input 4	Optionally, type a description for the contact. This description will be used to identify the contact in a Task.	N/A	N/A
General			
Instrument Name	The name that will be used to identify this instrument in a Task.	Liquid Handler	N/A
GSIOC ID	A unique numerical address that must be known to the instrument and to the software that allows the software to communicate to the instrument.	10	0–31

ASPEC XLi Properties Table *(Page 2 of 2)*

GX-271 ASPEC without Pump



The GX-271 ASPEC without Pump Properties Window

Properties

GX-271 ASPEC without Pump Properties

Property Name	*Brief Description*	*Default Value*	*Range*
Setup			
Probe Type (mm)	If the stop pin was inserted in S1, select 56 mm Probe. If the stop pin was inserted in S2, select 125 mm Probe. If no stop pin was used, select 175 mm Probe.	125 mm Probe	56 mm Probe, 125 mm Probe, 175 mm Probe
Z Clamp Height (mm)	This number corresponds to where the mounting clamp is on the vertical ruler on the installed Z-arm.	185	Calculated based on Z Clamp Height and Probe Type. Range provided on-screen.
Z Safe Height (mm)	The Z-height to which the instrument's probe moves before moving in the X or Y direction.	185	Calculated based on Z Clamp Height and Probe Type. Range provided on-screen.
GX Direct Inject Valve	Indicate the size of the valve installed.	Not Installed	Not Installed, 1/8", 1/16"

GX-271 ASPEC without Pump Properties Table *(Page 1 of 3)*

GX-271 ASPEC without Pump Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Contacts			
Output 1 Output 2 24V Output 1 24V Output 2	Optionally, type a description for the contact. This description will be used to identify the contact in a Task. Additionally, indicate whether the contact should open, close, or remain in the same state on error. The default is No Change for Outputs 1 and 2 and Open for 24V Outputs 1 and 2.	N/A	N/A
Input A Input B	Optionally, type a description for the contact. This description will be used to identify the contact in a Task.	N/A	N/A
Solenoid 1 Solenoid 2	Optionally, type a description for the solenoid. This description will be used to identify the solenoid in a Task.	N/A	N/A
General			
Instrument Name	The name that will be used to identify this instrument in a Task.	Liquid Handler	N/A

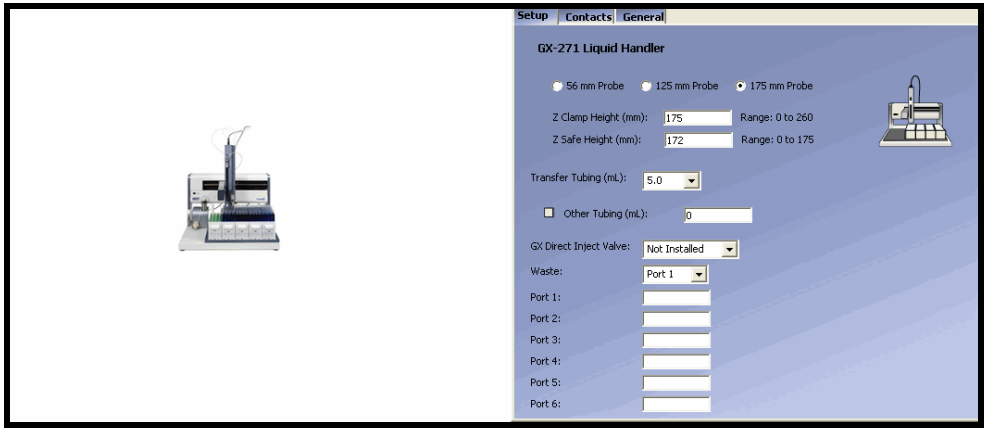
GX-271 ASPEC without Pump Properties Table *(Page 2 of 3)*

GX-271 ASPEC without Pump Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Instrument Serial Number	The serial number of the instrument.	N/A	N/A
Injection Module Serial Number	The serial number of the injection module.	N/A	N/A

GX-271 ASPEC without Pump Properties Table *(Page 3 of 3)*

GX-271 Liquid Handler



The GX-271 Liquid Handler Properties Window

Properties

GX-271 Liquid Handler Properties

Property Name	*Brief Description*	*Default Value*	*Range*
Setup			
Probe Type (mm)	If the stop pin was inserted in S1, select 56 mm Probe. If the stop pin was inserted in S2, select 125 mm Probe. If no stop pin was used, select 175 mm Probe.	175 mm Probe	56 mm Probe, 125 mm Probe, 175 mm Probe

GX-271 Liquid Handler Properties Table *(Page 1 of 4)*

GX-271 Liquid Handler Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Z Clamp Height (mm)	This number corresponds to where the mounting clamp is on the vertical ruler on the installed Z-arm.	175	Calculated based on Z Clamp Height and Probe Type. Range provided on-screen.
Z Safe Height (mm)	The Z-height to which the instrument's probe moves before moving in the X or Y direction.	172	Calculated based on Z Clamp Height and Probe Type. Range provided on-screen.
Transfer Tubing (mL)	The size of the tubing being used from pump to probe.	5.0	0.5, 1.1, 5.0, 10.5, 30, 50
Other Tubing (mL)	When selected, the non-standard size of the tubing being used from pump to probe.	0	0–99
GX Direct Inject Valve	Indicate the size of the valve installed.	Not Installed	Not Installed, 1/8", 1/16"
Waste	Indicate the solvent valve port to be used for waste.	Port 1	Port 1, Port 2, Port 3, Port 4, Port 5, Port 6

GX-271 Liquid Handler Properties Table *(Page 2 of 4)*

GX-271 Liquid Handler Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Port 1 Port 2 Port 3 Port 4 Port 5 Port 6	Optionally, type a description of the solvent valve port.	N/A	N/A
Contacts			
Output 1 Output 2 24V Output 1 24V Output 2	Optionally, type a description for the contact. This description will be used to identify the contact in a Task. Additionally, indicate whether the contact should open, close, or remain in the same state on error. The default is No Change for Outputs 1 and 2 and Open for 24V Outputs 1 and 2.	N/A	N/A
Input A Input B	Optionally, type a description for the contact. This description will be used to identify the contact in a Task.	N/A	N/A

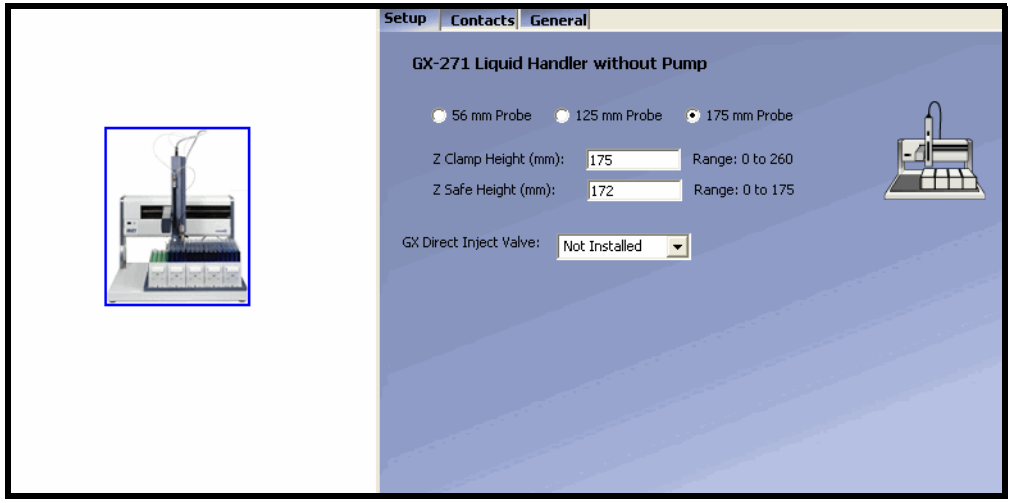
GX-271 Liquid Handler Properties Table *(Page 3 of 4)*

GX-271 Liquid Handler Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Solenoid 1 Solenoid 2	Optionally, type a description for the solenoid. This description will be used to identify the solenoid in a Task.	N/A	N/A
General			
Instrument Name	The name that will be used to identify this instrument in a Task.	Liquid Handler	N/A
Instrument Serial Number	The serial number of the instrument.	N/A	N/A
Pump Serial Number	The serial number of the solvent system.	N/A	N/A
Injection Module Serial Number	The serial number of the injection module.	N/A	N/A

GX-271 Liquid Handler Properties Table *(Page 4 of 4)*

GX-271 Liquid Handler without Pump



The GX-271 Liquid Handler without Pump Properties Window

Properties

GX-271 Liquid Handler without Pump Properties

Property Name	*Brief Description*	*Default Value*	*Range*
Setup			
Probe Type (mm)	If the stop pin was inserted in S1, select 56 mm Probe. If the stop pin was inserted in S2, select 125 mm Probe. If no stop pin was used, select 175 mm Probe.	175 mm Probe	56 mm Probe, 125 mm Probe, 175 mm Probe
Z Clamp Height (mm)	This number corresponds to where the mounting clamp is on the vertical ruler on the installed Z-arm.	175	Calculated based on Z Clamp Height and Probe Type. Range provided on-screen.
Z Safe Height (mm)	The Z-height to which the instrument's probe moves before moving in the X or Y direction.	172	Calculated based on Z Clamp Height and Probe Type. Range provided on-screen.
GX Direct Inject Valve	Indicate the size of the valve installed.	Not Installed	Not Installed, 1/8", 1/16"

GX-271 Liquid Handler without Pump Properties Table *(Page 1 of 3)*

GX-271 Liquid Handler without Pump Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Contacts			
Output 1 Output 2 24V Output 1 24V Output 2	Optionally, type a description for the contact. This description will be used to identify the contact in a Task. Additionally, indicate whether the contact should open, close, or remain in the same state on error. The default is No Change for Outputs 1 and 2 and Open for 24V Outputs 1 and 2.	N/A	N/A
Input A Input B	Optionally, type a description for the contact. This description will be used to identify the contact in a Task.	N/A	N/A
Solenoid 1 Solenoid 2	Optionally, type a description for the solenoid. This description will be used to identify the solenoid in a Task.	N/A	N/A
General			
Instrument Name	The name that will be used to identify this instrument in a Task.	Liquid Handler	N/A

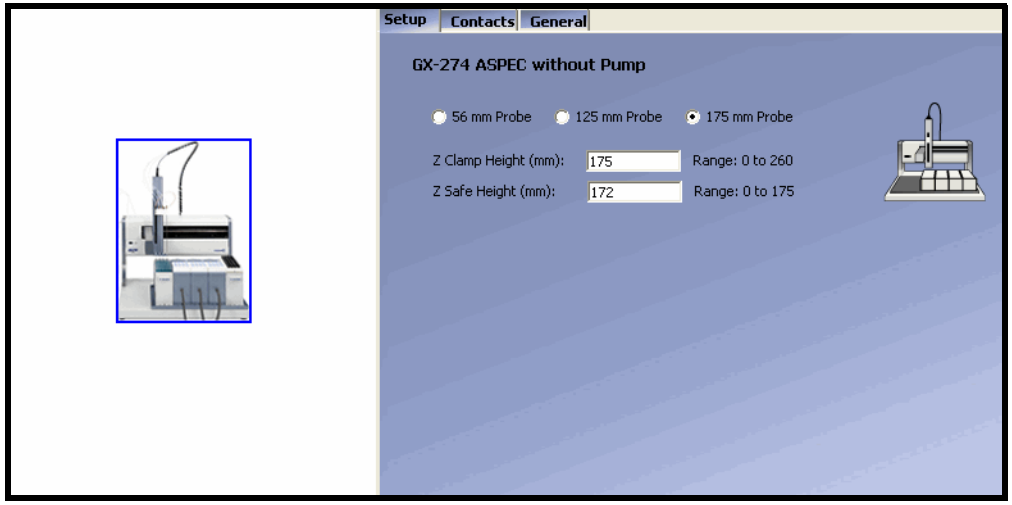
GX-271 Liquid Handler without Pump Properties Table *(Page 2 of 3)*

GX-271 Liquid Handler without Pump Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Instrument Serial Number	The serial number of the instrument.	N/A	N/A
Injection Module Serial Number	The serial number of the injection module.	N/A	N/A

GX-271 Liquid Handler without Pump Properties Table *(Page 3 of 3)*

GX-274 ASPEC without Pump



The GX-274 ASPEC without Pump Properties Window

Properties

GX-274 ASPEC without Pump Properties

Property Name	*Brief Description*	*Default Value*	*Range*
Setup			
Probe Type (mm)	If the stop pin was inserted in S1, select 56 mm Probe. If the stop pin was inserted in S2, select 125 mm Probe. If no stop pin was used, select 175 mm Probe.	125 mm Probe	56 mm Probe, 125 mm Probe, 175 mm Probe

GX-274 ASPEC without Pump Properties Table *(Page 1 of 3)*

GX-274 ASPEC without Pump Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Z Clamp Height (mm)	This number corresponds to where the mounting clamp is on the vertical ruler on the installed Z-arm.	185	Calculated based on Z Clamp Height and Probe Type. Range provided on-screen.
Z Safe Height (mm)	The Z-height at which the instrument's probe moves to before moving in the X or Y direction.	185	Calculated based on Z Clamp Height and Probe Type. Range provided on-screen.
Contacts			
Output 1 Output 2 24V Output 1 24V Output 2	Optionally, type a description for the contact. This description will be used to identify the contact in a Task. Additionally, indicate whether the contact should open, close, or remain in the same state on error. The default is No Change for Outputs 1 and 2 and Open for 24V Outputs 1 and 2.	N/A	N/A
Input A Input B	Optionally, type a description for the contact. This description will be used to identify the contact in a Task.	N/A	N/A

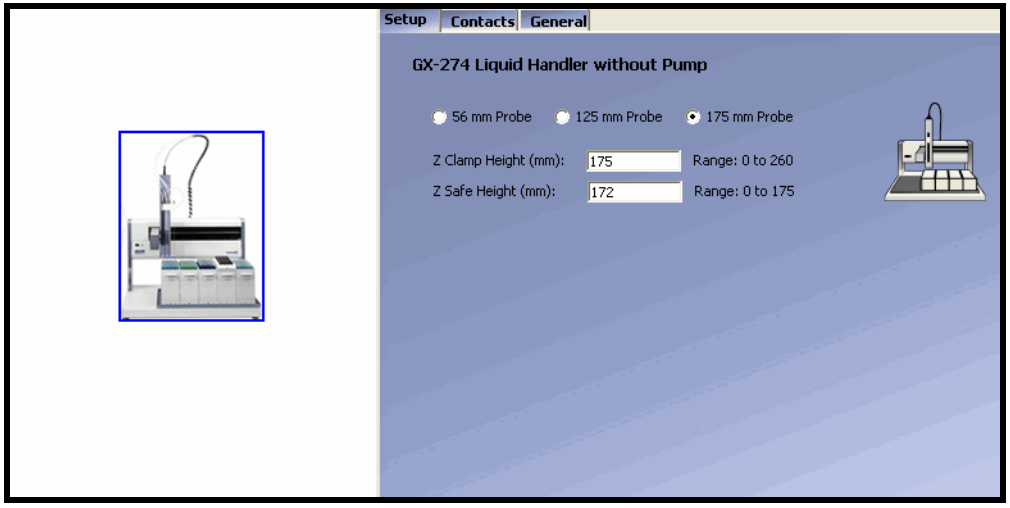
GX-274 ASPEC without Pump Properties Table *(Page 2 of 3)*

GX-274 ASPEC without Pump Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Solenoid 1 Solenoid 2	Optionally, type a description for the solenoid. This description will be used to identify the solenoid in a Task.	N/A	N/A
General			
Instrument Name	The name that will be used to identify this instrument in a Task.	Liquid Handler	N/A
Instrument Serial Number	The serial number of the instrument.	N/A	N/A

GX-274 ASPEC without Pump Properties Table *(Page 3 of 3)*

GX-274 Liquid Handler without Pump



The GX-274 Liquid Handler without Pump Properties Window

Properties

GX-274 Liquid Handler without Pump Properties

Property Name	*Brief Description*	*Default Value*	*Range*
Setup			
Probe Type (mm)	If the stop pin was inserted in S1, select 56 mm Probe. If the stop pin was inserted in S2, select 125 mm Probe. If no stop pin was used, select 175 mm Probe.	175 mm Probe	56 mm Probe, 125 mm Probe, 175 mm Probe

GX-274 Liquid Handler without Pump Properties Table *(Page 1 of 3)*

GX-274 Liquid Handler without Pump Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Z Clamp Height (mm)	This number corresponds to where the mounting clamp is on the vertical ruler on the installed Z-arm.	175	Calculated based on Z Clamp Height and Probe Type. Range provided on-screen.
Z Safe Height (mm)	The Z-height at which the instrument's probe moves to before moving in the X or Y direction.	172	Calculated based on Z Clamp Height and Probe Type. Range provided on-screen.
Contacts			
Output 1 Output 2 24V Output 1 24V Output 2	Optionally, type a description for the contact. This description will be used to identify the contact in a Task. Additionally, indicate whether the contact should open, close, or remain in the same state on error. The default is No Change for Outputs 1 and 2 and Open for 24V Outputs 1 and 2.	N/A	N/A
Input A Input B	Optionally, type a description for the contact. This description will be used to identify the contact in a Task.	N/A	N/A

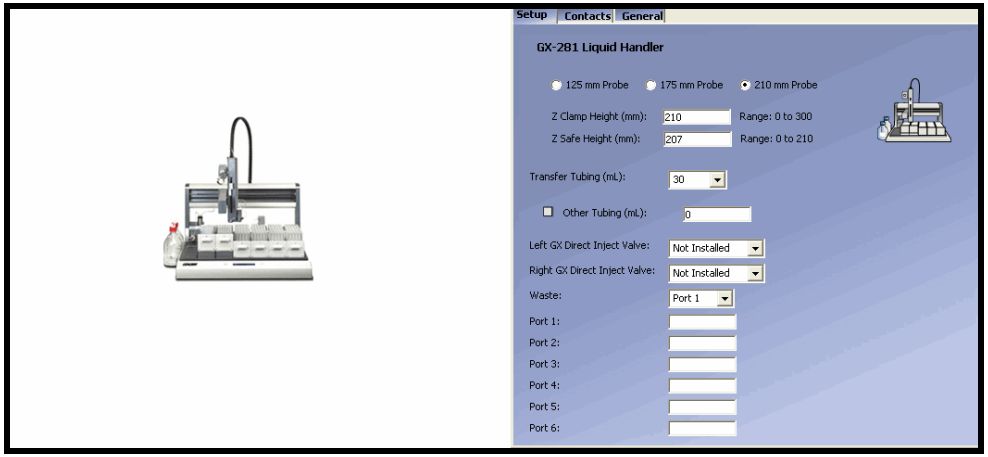
GX-274 Liquid Handler without Pump Properties Table *(Page 2 of 3)*

GX-274 Liquid Handler without Pump Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Solenoid 1 Solenoid 2	Optionally, type a description for the solenoid. This description will be used to identify the solenoid in a Task.	N/A	N/A
General			
Instrument Name	The name that will be used to identify this instrument in a Task.	Liquid Handler	N/A
Instrument Serial Number	The serial number of the instrument.	N/A	N/A

GX-274 Liquid Handler without Pump Properties Table *(Page 3 of 3)*

GX-281 Liquid Handler



The GX-281 Liquid Handler Properties Window

Properties

GX-281 Liquid Handler Properties

Property Name	*Brief Description*	*Default Value*	*Range*
Setup			
Probe Type (mm)	This is the Z travel height.	210 mm Probe	125 mm Probe, 175 mm Probe, 210 mm Probe

GX-281 Liquid Handler Properties Table *(Page 1 of 4)*

GX-281 Liquid Handler Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Z Clamp Height (mm)	This number corresponds to where the mounting clamp is on the vertical ruler on the installed Z-arm.	210	Calculated based on Z Clamp Height and Probe Type. Range provided on-screen.
Z Safe Height (mm)	The Z-height to which the instrument's probe moves before moving in the X or Y direction.	207	Calculated based on Z Clamp Height and Probe Type. Range provided on-screen.
Transfer Tubing (mL)	The size of the tubing being used from pump to probe.	30	1.1, 3, 5, 10.5, 30, 50
Other Tubing (mL)	When selected, the non-standard size of the tubing being used from pump to probe.	0	0–99
Left GX Direct Inject Valve	Indicate the size of the valve installed in the left position.	Not Installed	Not Installed, 1/8", 1/16"
Right GX Direct Inject Valve	Indicate the size of the valve installed in the right position.	Not Installed	Not Installed, 1/8", 1/16"

GX-281 Liquid Handler Properties Table *(Page 2 of 4)*

GX-281 Liquid Handler Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Waste	Indicate the solvent valve port to be used for waste.	Port 1	Port 1, Port 2, Port 3, Port 4, Port 5, Port 6
Port 1 Port 2 Port 3 Port 4 Port 5 Port 6	Optionally, type a description of the solvent valve port.	N/A	N/A
Contacts			
Output 1 Output 2 Output 3 Output 4 24V Output 1 24V Output 2 24V Output 3 24V Output 4	Optionally, type a description for the contact. This description will be used to identify the contact in a Task. Additionally, indicate whether the contact should open, close, or remain in the same state on error. The default is No Change for Outputs and Open for 24V Outputs.	N/A	N/A
Input A Input B Input C Input D	Optionally, type a description for the contact. This description will be used to identify the contact in a Task.	N/A	N/A

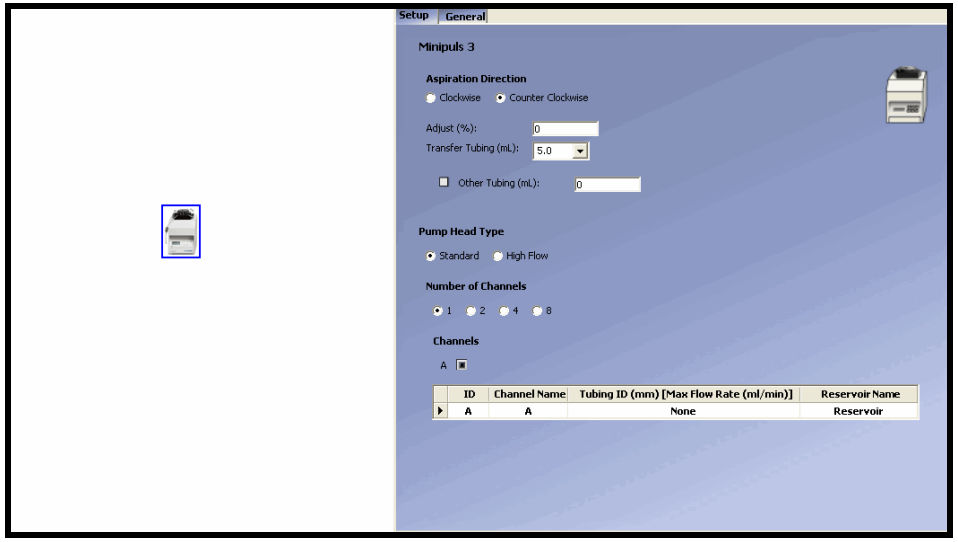
GX-281 Liquid Handler Properties Table *(Page 3 of 4)*

GX-281 Liquid Handler Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
General			
Instrument Name	The name that will be used to identify this instrument in a Task.	Liquid Handler	N/A
GSIOC ID	A unique numerical address that must be known to the instrument and to the software that allows the software to communicate to the instrument.	25	20–29

GX-281 Liquid Handler Properties Table *(Page 4 of 4)*

Minipuls 3



The Minipuls 3 Properties Window

Properties

Minipuls 3 Properties

Property Name	*Brief Description*	*Default Value*	*Range*
Setup			
Aspiration Direction	Specifies which way the pump head on the Minipuls is turning when it is aspirating.	Counter Clockwise	Clockwise, Counter Clockwise

Minipuls 3 Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Adjust (%)	A percentage value to adjust flow rate for the Minipuls. Flow rate cannot exceed the maximum allowed for the tubing selected.	0	-100–100
Transfer Tubing (mL)	Tubing that is being used on the Minipuls in this Configuration.	5.0	0.2, 0.4, 1.0, 2.8, 3.0, 5.0, 10.0
Other Tubing (mL)	When selected, the non-standard size of the tubing being used on the Minipuls.	0	0–99
Pump Head Type	The pump head installed on the Minipuls.	Standard	Standard, High Flow
Number of Channels	The number of channels that will be used when this instrument is selected as the Pump in a Task.	1	1, 2, 4, 8
Channels	The channels that will be used when this instrument is selected as the Pump in a Task.	A	A, B, C, D, E, F, G, H
ID	A unique identifier to address the channel on the instrument.	A	A, B, C, D, E, F, G, H
Channel Name	A unique name to address the channel on the instrument.	A	N/A

Minipuls 3 Properties Table *(Page 2 of 3)*

Minipuls 3 Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Tubing ID (mm) [Max Flow Rate (mL/min)	The capacity of the tubing for each channel.	None	See **Tubing Options and Associated Maximum Flow Rates** on page 4-72.
Reservoir Name	A unique name used to identify the liquid that is flowing through the Minipuls. It is important for sample tracking.	Reservoir	N/A
Instrument Name	The name that will be used to identify this instrument in a Task.	Minipuls 3	N/A
Reservoir Name	The name that will be used to identify the liquid that is flowing through the associated syringe. It is important for sample tracking.	Reservoir	N/A
General			
Pump Name	The name that will be used to identify this pump in a Task.	Pump	
GSIOC ID	A unique numerical address that must be known to the instrument and to the software that allows the software to communicate to the instrument.	30	0–63

Minipuls 3 Properties Table *(Page 3 of 3)*

Tubing Options and Associated Maximum Flow Rates

Tubing	*Maximum Flow Rate (mL/min)*
Standard	
PVC 0.25 mm	0.41
PVC 0.38 mm	0.69
PVC 0.51 mm	1.42
PVC 0.76 mm	2.15
PVC 1.02 mm	4.06
PVC 1.3 mm	6.14
PVC 1.52 mm	9.09
PVC 1.65 mm	10.46
PVC 2.06 mm	15.1
PVC 2.29 mm	18.79
PVC 2.79 mm	22.17
PVC 3.16 mm	27.52
Fluoroelastomer 0.5 mm	1.77
Fluoroelastomer 1 mm	3.87
Fluoroelastomer 2 mm	12.54
Fluoroelastomer 3 mm	28.25

Tubing Options and Associated Maximum Flow Rates Table *(Page 1 of 3)*

Tubing Options and Associated Maximum Flow Rates

Tubing	*Maximum Flow Rate (mL/min)*
Fluoroelastomer 4 mm	33.92
Silicone 0.6 mm	1.58
Silicone 1 mm	4.13
Silicone 2 mm	14.94
Silicone 2.8 mm	21.73
Polypropylene 0.5 mm	1.48
Polypropylene 1 mm	4.74
Polypropylene 2 mm	15.52
High Flow	
PVC 2.06 mm	24.7
PVC 2.29 mm	30.08
PVC 2.79 mm	42.55
PVC 3.16 mm	49.59
PVC 4.0 mm	80.94
PVC 5.0 mm	96
PVC 6.0 mm	157.89
PVC 8.0 mm	209.61

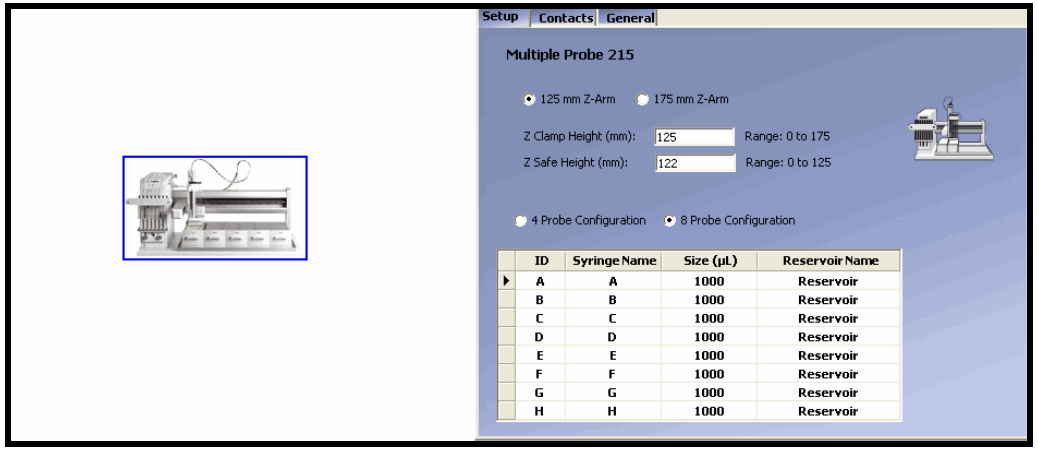
Tubing Options and Associated Maximum Flow Rates Table *(Page 2 of 3)*

Tubing Options and Associated Maximum Flow Rates

Tubing	*Maximum Flow Rate (mL/min)*
Fluoroelastomer 2.0 mm	23.9
Fluoroelastomer 3.0 mm	48.34
Fluoroelastomer 4 mm	74.19
Fluoroelastomer 6 mm	153.85
Silicone 2 mm	25.72
Silicone 3 mm	45.45
Silicone 4 mm	68.77
Silicone 5 mm	106.19
Silicone 6.0 mm	150.94
Silicone 7.0	211.45
Polypropylene 2 mm	27.01
Polypropylene 3.2 mm	55.05
Polypropylene 6.4	169.61

Tubing Options and Associated Maximum Flow Rates Table *(Page 3 of 3)*

Multiple Probe 215



The Multiple Probe 215 Properties Window

Properties

Multiple Probe 215 Properties

Property Name	*Brief Description*	*Default Value*	*Range*
Setup - Multiple Probe 215 Liquid Handler			
Z Arm Type (mm)	This is the height of the Z-arm installed on the liquid handler.	125 mm Z-Arm	125 mm Z-Arm, 175 mm Z-Arm
Z Clamp Height (mm)	This number corresponds to where the mounting clamp is on the vertical ruler on the installed Z-arm.	125	0–175 Range provided on-screen.

Multiple Probe 215 Properties Table *(Page 1 of 3)*

Multiple Probe 215 Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Z Safe Height (mm)	The Z-height at which the instrument's probe moves to before moving in the X or Y direction.	122	Calculated based on Z Clamp Height and Z Arm Type. Range provided on-screen.
Configuration	The number of probes and syringes that will be used when selected as the Liquid Handler in a Task	8 Probe Configuration	4 Probe Configuration, 8 Probe Configuration
Setup-Syringe Pump			
ID	A unique identifier to address syringes on the instrument.	A, B, C, D, E, F, G, H	A, B, C, D, E, F, G, H
Syringe Name	A unique name to address syringes on the instrument.	A, B, C, D, E, F, G, H	A, B, C, D, E, F, G, H
Size (µL)	The capacity of each installed syringe. For a range of suggested flow rates for this syringe size, see **Flow Rates** on page 4-93.	1000	500, 1000, 2500, 5000
Reservoir Name	A unique name used to identify the liquid that is flowing through the associated syringe. It is important for sample tracking.	Reservoir	N/A

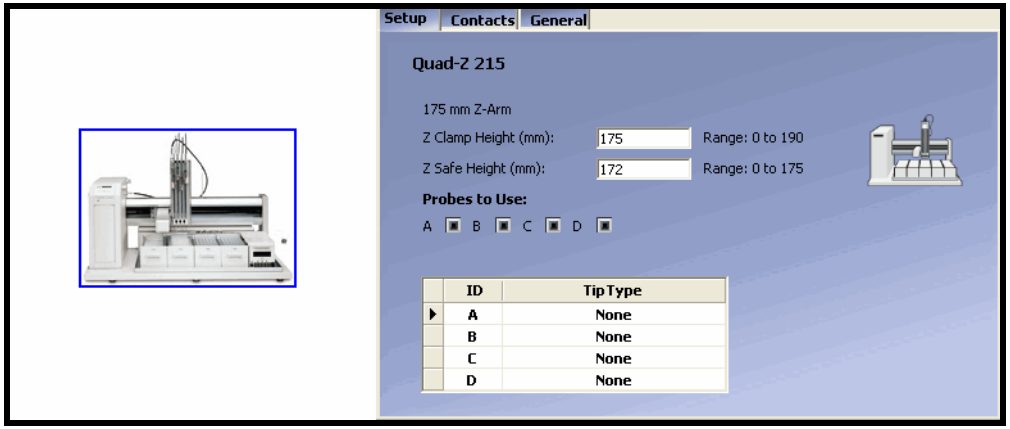
Multiple Probe 215 Properties Table *(Page 2 of 3)*

Multiple Probe 215 Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Contacts			
24V Output Output 1 Output 2 Output 3 Output 4	Optionally, type a description for the contact. This description will be used to identify the contact in a Task.	N/A	N/A
Input A Input B Input C Input D	Optionally, type a description for the contact. This description will be used to identify the contact in a Task.	N/A	N/A
General			
Instrument Name	The name that will be used to identify this instrument in a Task.	Liquid Handler	N/A
GSIOC ID	A unique numerical address that must be known to the instrument and to the software that allows the software to communicate with the instrument.	22	20–29

Multiple Probe 215 Properties Table *(Page 3 of 3)*

Quad-Z 215



The Quad-Z 215 Properties Window

Properties

Quad-Z 215 Properties

Property Name	*Brief Description*	*Default Value*	*Range*
Setup			
Z Clamp Height (mm)	This number corresponds to where the mounting clamp is on the vertical ruler on the installed Z-arm.	175	0–190 Range provided on-screen.

Quad-Z 215 Properties Table *(Page 1 of 3)*

Quad-Z 215 Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Z Safe Height (mm)	The Z-height at which the instrument's probe moves to before moving in the X or Y direction. For Quad-Z 215 with Tips, TRILUTION LH considers the installed tip when determining the Z Safe Height.	172	Calculated based on Z Clamp Height and Z Arm Type. Range provided on-screen.
Probes to Use	The probes that will be used when this instrument is selected as the Pump in a Task.	A, B, C, D	A, B, C, D
ID	A unique identifier to address probes on the instrument.	A, B, C, D	A, B, C, D
Tip Type	The tips installed on the liquid handler. When a tip type is selected, a tip zone is automatically created in the Bed Layout.	None	DL10 + Tip Holder Type A, DL10 + Tip Holder Type B, Tip D200, Tip D1000
Contacts			
24V Output Output 1 Output 2 Output 3 Output 4	Optionally, type a description for the contact. This description will be used to identify the contact in a Task.	N/A	N/A

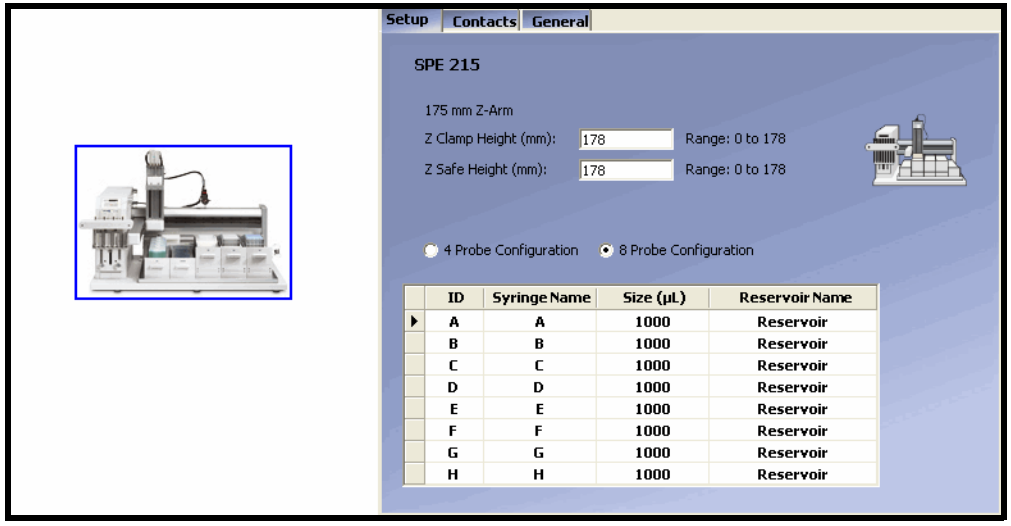
Quad-Z 215 Properties Table *(Page 2 of 3)*

Quad-Z 215 Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Input A Input B Input C Input D	Optionally, type a description for the contact. This description will be used to identify the contact in a Task.	N/A	N/A
General			
Instrument Name	The name that will be used to identify this instrument in a Task.	Liquid Handler	N/A
GSIOC ID	A unique numerical address that must be known to the instrument and to the software that allows the software to communicate with the instrument.	22	20–29

Quad-Z 215 Properties Table *(Page 3 of 3)*

SPE 215



The SPE 215 Properties Window

Properties

SPE 215 Properties

Property Name	*Brief Description*	*Default Value*	*Range*
Setup - SPE 215			
Z Clamp Height (mm)	This number corresponds to where the mounting clamp is on the vertical ruler on the installed Z-arm.	178	0–178 Range provided on-screen.

SPE 215 Properties Table *(Page 1 of 3)*

SPE 215 Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Z Safe Height (mm)	The Z-height at which the instrument's probe moves to before moving in the X or Y direction.	178	Calculated based on Z Clamp Height and Z Arm Type. Range provided on-screen.
Configuration	The number of probes and syringes that will be used when selected as the Liquid Handler in a Task	8 Probe Configuration	4 Probe Configuration, 8 Probe Configuration
Setup-Syringe Pump			
ID	A unique identifier to address syringes on the instrument.	A, B, C, D, E, F, G, H	A, B, C, D, E, F, G, H
Syringe Name	A unique name to address syringes on the instrument.	A, B, C, D, E, F, G, H	A, B, C, D, E, F, G, H
Size (µL)	The capacity of each installed syringe. For a range of suggested flow rates for this syringe size, see **Flow Rates** on page 4-93.	1000	500, 1000, 2500, 5000
Reservoir Name	A unique name used to identify the liquid that is flowing through the associated syringe. It is important for sample tracking.	Reservoir	N/A

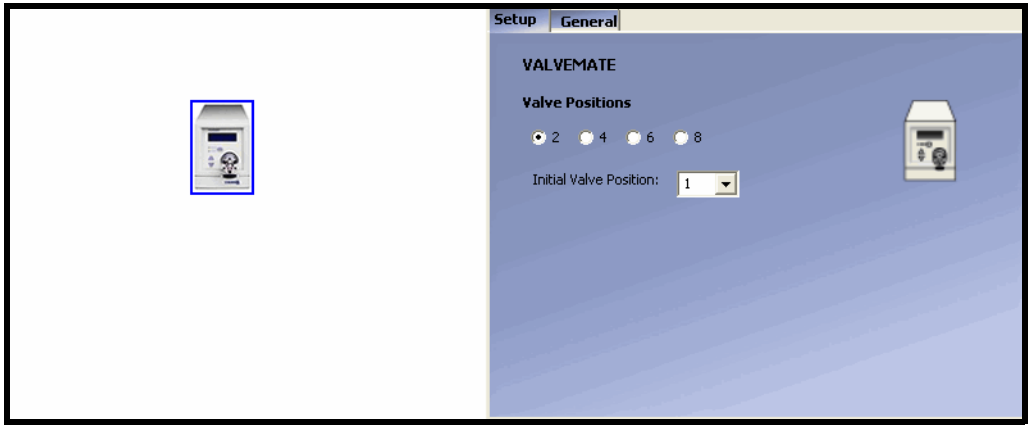
SPE 215 Properties Table *(Page 2 of 3)*

SPE 215 Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
Contacts			
24V Output Output 1 Output 2 Output 3 Output 4	Optionally, type a description for the contact. This description will be used to identify the contact in a Task.	N/A	N/A
Input A Input B Input C Input D	Optionally, type a description for the contact. This description will be used to identify the contact in a Task.	N/A	N/A
General			
Instrument Name	The name that will be used to identify this instrument in a Task.	Liquid Handler	N/A
GSIOC ID	A unique numerical address that must be known to the instrument and to the software that allows the software to communicate with the instrument.	22	20–29

SPE 215 Properties Table *(Page 3 of 3)*

VALVEMATE



The VALVEMATE Properties Window

Properties

VALVEMATE Properties

Property Name	*Brief Description*	*Default Value*	*Range*
Setup			
Valve Positions	The number of ports in the VALVEMATE valve.	2	2, 4, 6, 8
Initial Valve Position	The valve position after initialization at the beginning of a run.	1	1, 2

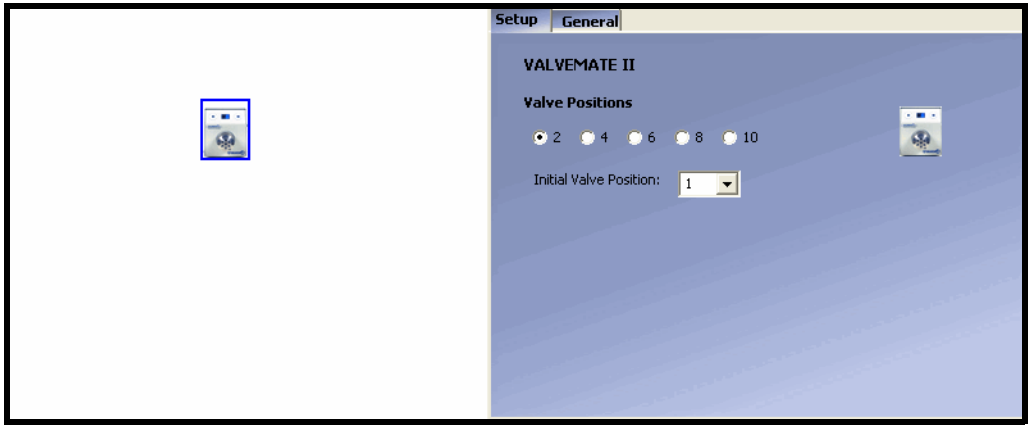
VALVEMATE Properties Table *(Page 1 of 2)*

VALVEMATE Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
General			
Instrument Name	The name that will be used to identify this instrument in a Task.	Valve	N/A
GSIOC ID	A unique numerical address that must be known to the instrument and to the software that allows the software to communicate to the instrument.	35	30–39

VALVEMATE Properties Table *(Page 2 of 2)*

VALVEMATE II



The VALVEMATE II Properties Window

Properties

VALVEMATE II Properties

Property Name	*Brief Description*	*Default Value*	*Range*
Setup			
Valve Positions	The number of ports in the VALVEMATE valve.	2	2, 4, 6, 8, 10
Initial Valve Position	The valve position when homed.	1	1, 2

VALVEMATE II Properties Table *(Page 1 of 2)*

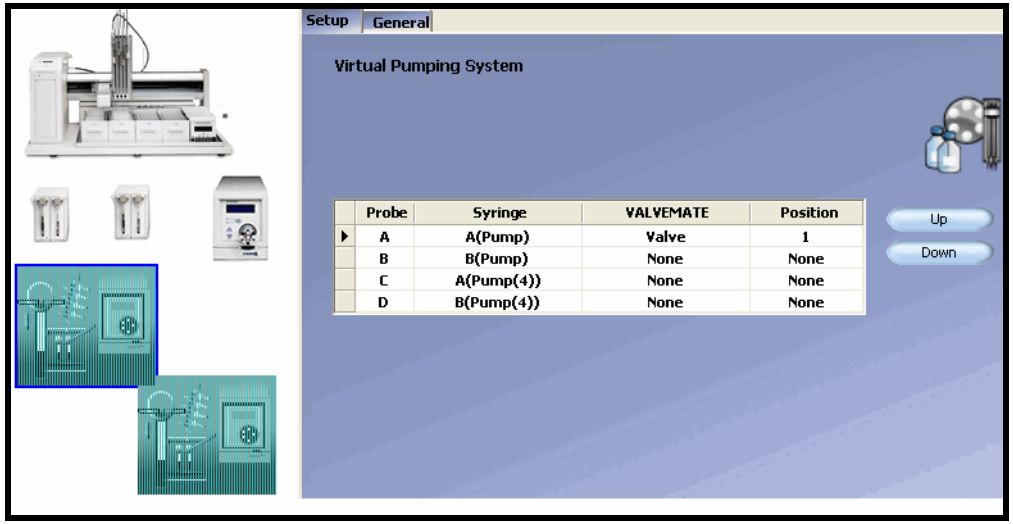
VALVEMATE II Properties (Continued)

Property Name	*Brief Description*	*Default Value*	*Range*
General			
Instrument Name	The name that will be used to identify this instrument in a Task.	Valve	N/A
GSIOC ID	A unique numerical address that must be known to the instrument and to the software that allows the software to communicate to the instrument.	35	30–39

VALVEMATE II Properties Table *(Page 2 of 2)*

Virtual Pumping System

The Virtual Pumping System (VPS) is a group of instruments that are combined to perform as a pumping system. A VPS consists of probes from a liquid handler and syringes. Optionally, a VALVEMATE may be included to provide additional fluid paths. The Configuration can include one or more VPS.



The Virtual Pumping System Properties Window

Properties

Virtual Pumping System

Property Name	*Brief Description*	*Default Value*
Setup		
Probe	The probes in the Configuration using the VPS.	
Syringe	The syringes in the Configuration using the VPS.	
VALVEMATE	The VALVEMATE that the VPS will use (if any).	
Position	The valve position (A–H) on the VALVEMATE. Required when a VALVEMATE is selected.	
General		
Pump Name	The name that will be used to identify this instrument in a Task.	Pump
Virtual Pumping System		

Using a VPS

To Use Multiple Reservoir Solutions:

For a system using multiple reservoir solutions, complete the following:

1 Drag and drop a single-probe liquid handler with installed single syringe pump into the workspace (for example, 215 Liquid Handler or Micro 215) and set the properties.

2 Drag and drop a VALVEMATE into the workspace and set the properties. Your VALVEMATE should be plumbed and ready to go at this point.

3 Drag and drop a Virtual Pumping System into the workspace.

   a) In the VALVEMATE field, click the arrow and then select the VALVEMATE from the drop-down list.

   b) In the Position field, click the arrow and then select the VALVEMATE valve position from the drop-down list that corresponds to the first reservoir solution.

   c) In the Pump Name field, type a name for the first VPS. This is a good place to reference the first reservoir solution. This name will be used to identify the VPS in a Task.

4 Repeat step 3 for additional reservoirs.

Quad-Z 215 with Two 402 Pump Duals

For a system using multiple syringe sizes with a Quad-Z 215, complete the following:

1 Drag and drop a Quad-Z 215 into the workspace and set the properties.

2 Drag and drop two 402 Pump Duals into the workspace and set the properties. You will need to set a unique GSIOC ID for each.

3 Drag and drop a Virtual Pumping System into the workspace.

   a) Click on a Syringe Name and then click the up or down arrow to associate the syringe with a probe.

   b) In the Pump Name field, type a name for the VPS. This name will be used to identify the VPS in a Task.

Single-Probe, Multiple-Syringe Configuration

1 Drag and drop a single-probe liquid handler into the workspace and set the properties.

2 Drag and drop a VALVEMATE into the workspace and set the properties. Your VALVEMATE should be plumbed and ready to go at this point.

3 Drag and drop the pumps into the workspace and set the properties. You will need to set a unique GSIOC ID for each.

4 Drag and drop a Virtual Pumping System into the workspace.

a) Click on a Syringe Name and then click the up or down arrow to associate the syringe with a probe.

b) In the VALVEMATE field, click the arrow and then select the VALVEMATE from the drop-down list.

c) In the Position field, click the arrow and then select the VALVEMATE valve position from the drop-down list that corresponds to the syringe.

d) In the Pump Name field, type a name for the VPS. This name will be used to identify the VPS in a Task.

5 Repeat step 4 for each additional syringe.

Flow Rates

Syringe Pumps

The following table provides suggested flow rate values by instrument and syringe size.

Syringe Size (µL)	Instrument											
	215 Liquid Handler		402 Pump Single/ Dual/ Dual with Tee, and 444 QuadDilutor		ASPEC XL4 (404 Syringe Pump)		GX-271/274 ASPEC (406 Single/ Dual)		Multiple Probe 215		SPE 215	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
	mL/min		mL/min		mL/min		mL/min		mL/min		mL/min	
100	0.0002	3.3	0.0001	4			0.0001	4				
250	0.0004	8.4	0.001	10			0.001	10				
500	0.001	16	0.001	20	0.001	20	0.001	20	0.001	16	0.01	16
1000	0.002	33	0.01	40	0.01	40	0.01	40	0.002	25	0.01	25
2500									0.004	25	0.01	25
5000	0.01	100	0.01	100	0.01	100	0.01	100	0.01	25	0.01	25
10000	0.02	100	0.01	100	0.01	100	0.01	100				
25000	0.1	100	0.1	100	0.1	100	0.1	100				

Minipuls 3

For Minipuls 3 flow rates, refer to **Tubing Options and Associated Maximum Flow Rates** on page 4-72.

GX Analytical Solvent System

The suggested minimum flow rate is 0.001 mL/min. The suggested maximum flow rate is 5 mL/min.

GX Prep Solvent System

The suggested minimum flow rate is 0.001 mL/min. The suggested maximum flow rate is 50 mL/min.

Modifying a Configuration

Modify a Configuration by doing one or more of the following:

- Adding new instruments to an existing Configuration.
- Deleting instruments from an existing Configuration.
- Modifying the instrument properties of the instruments in a Configuration.

When you right-click on an instrument in the Workspace, a menu displays with the option to **DELETE** the instrument.

You can delete selected instruments in the workspace by pressing the **DELETE** key.

Clear Default

When a Method is saved, the Configuration is named. An option is provided to set that Configuration and its associated Bed Layout as a default for future new Methods. Click **CLEAR DEFAULT** to remove a Configuration and its associated Bed Layout as default.

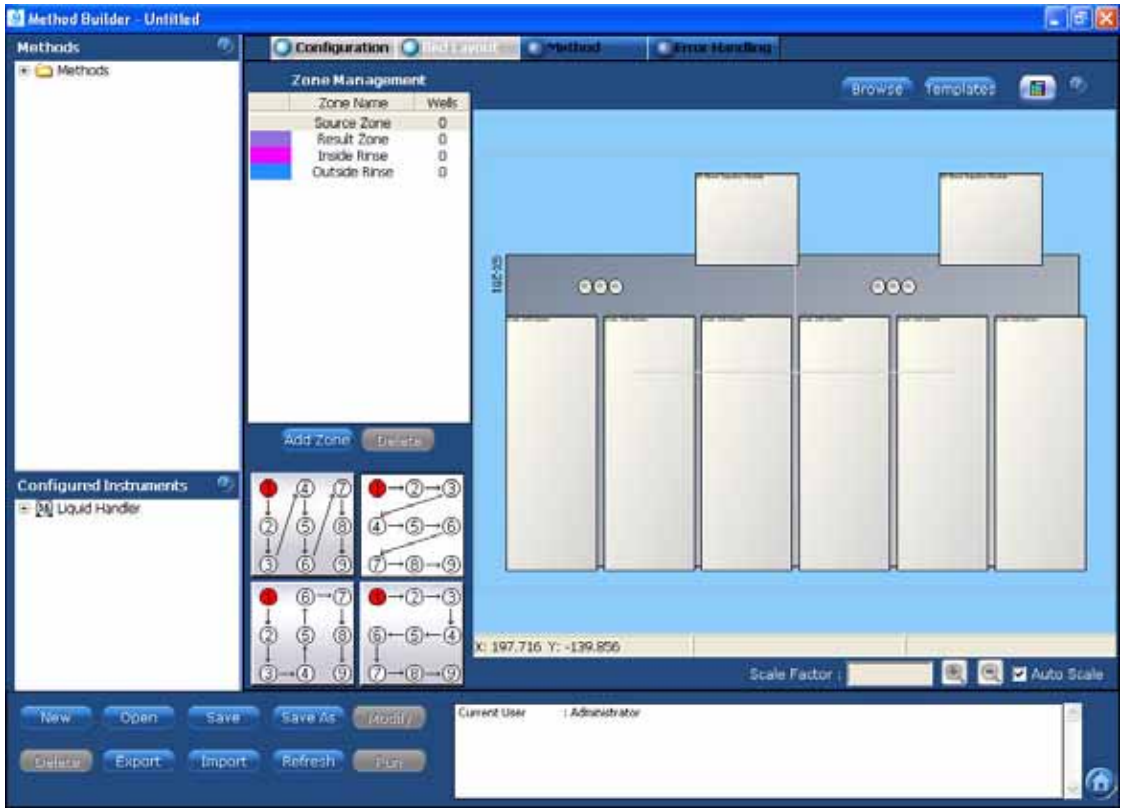
Method Builder - Bed Layout 5

A Bed Layout serves as one of the building blocks of a Method and consists of the following:

- Template
- Footprints
- Rack(s)
- Well(s)

Bed Layout Tab Window

The Bed Layout window is a graphical interface used to create a Bed Layout.



The Method Builder - Bed Layout Tab Window

It has the following sections:

Section	*Described on*
Methods Palette	page 5-3
Configured Instruments	page 5-3
Zone Management	page 5-3
Numbering Pattern	page 5-6
Workspace	page 5-6

Methods Palette

This palette lists the methods created.

Configured Instruments

Displays the name of the liquid handler in the Configuration and its associated bed layout.

Zone Management

Use Zone Management to create, modify, delete, and select zones for inactive and active wells.

Adding Zones

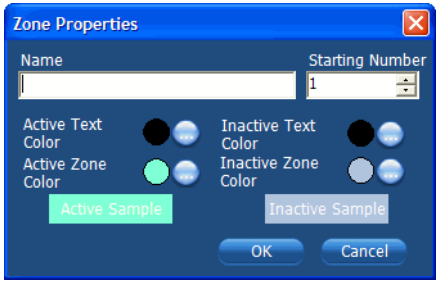
1 Click **ADD ZONE**. Enter the name and starting number.

- **Name**: When creating multiple zones, each zone must have a unique name.

When naming zones for transfer ports, name them Solvent A, Solvent B, etc.

- **Starting Number**: Identifies the first number that will be used when numbering wells in the zone.

2 Use the browse buttons ( ) to select a color or use the default colors offered.



The Zone Properties Window

- **Active Text Color**: The color that is used for the numbers of the wells when the zone is active.
- **Inactive Text Color**: The color that is used for the numbers of the wells when the zone is inactive.

- **Active Zone Color**: The color used for the wells in the zone when it is active. As new zones are added, the Active Zone Color automatically increments. The zone becomes active when it is selected from the Zone drop-down menu. Only one zone can be active at a time. Refer to the Sample in the dialog to see the Active Text Color on the Active Zone Color.
- **Inactive Zone Color**: The color used for the wells in the zone when it is inactive. The zone becomes inactive when another zone is selected from the Zone drop-down menu. Multiple zones can be inactive at one time.

3 Click **OK**.

Modifying Zones

To modify a zone:

1 Double-click Zone Name from the Zone Management list.

2 Make changes to the name, starting number, and/or colors.

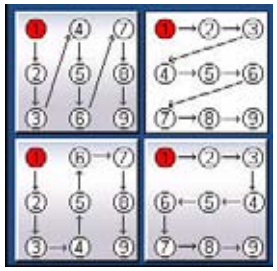
3 Click **OK**.

Deleting Zones

To delete a zone, select the Zone Name in the Zone Management list and then click **DELETE**.

Numbering Pattern

Numbering Pattern allows you to select how blocks of wells are numbered.



The Numbering Pattern

To select a pattern for numbering the wells, do the following:

1 Click on the desired pattern.

2 Click on the starting corner desired for the pattern (the well is highlighted red).

Workspace

Forms the area to create or view a Bed Layout.

Creating a Bed Layout

1 Create a Configuration. Refer to **Creating a Configuration** on page 4-5, if necessary.

2 Do one of the following:

- To use the displayed template, continue to Step 3.
- Click **TEMPLATES**. Select a Bed Layout template and click **OK**. The new template displays.
- Click **BROWSE**. Select an existing or imported Bed Layout and click **OK**. The selected template displays.

3 To add a Rack, do the following:

a) Double-click a footprint.

b) From the Select Rack window, select a Rack name.

c) Click **OK**. The window displays rack on the template.

4 Select a zone. Refer to **Zone Management** on page 5-3, if necessary.

5 Select a numbering pattern. Refer to **Numbering Pattern** on page 5-6, if necessary.

6 To add wells to a zone, do any of the following:

a) Hold **SHIFT** and then click on individual wells to number them in the order selected.

b) Lasso blocks of wells to number them according to the numbering pattern selected.

c) When using multiple layer racks, hide one layer to assign zone(s) to another. To do this, select/highlight the element then right click and select **HIDE** from the menu. Select **SHOW ALL** to unhide the elements.

If the liquid handler is a Quad-Z 215 Liquid Handler with Disposable Tips, be sure to use the tip zones TRILUTION LH created for tips.

7 In the workspace, do the following:

a) To zoom the Bed Layout, toggle the Auto Scale selection off.

b) To zoom in on the Bed Layout, click once or repeatedly (maximum scale factor 100, increments by 5). TRILUTION LH will zoom in to the center of the cross hairs. Move the cross hairs by scrolling the window.

c) To zoom out on the Bed Layout, click once or repeatedly.

d) To zoom to a specific scale factor, enter the number in the Scale Factor field.

Modifying a Bed Layout

You can modify a Bed Layout by doing the following:

- Add new racks, wells, or zones to the template.
- Delete racks from the workspace.
- Delete zones.
- Change the numbering pattern.
- Replace racks in the workspace.
- Add or clear wells from zones.

When you right-click on a rack or well in the workspace, a menu is provided with options to delete the rack or clear the well from the active zone or from all zones.

To modify a Bed Layout

1 Do any of the following:

a) Add new racks, wells, or zones to the template, see **Creating a Bed Layout** on page 5-7.

b) Delete racks from the workspace:

1) Click on the rack to select it.

2) Right-click and select **DELETE**.

c) Delete wells from all zones or from the active zone by doing the following:

   1) Select the wells.

   2) Right-click and select either **CLEAR SELECTED WELLS FROM ACTIVE ZONE** or **CLEAR SELECTED WELLS FROM ALL ZONES**.

d) Clear all zones or clear the active zone by doing the following:

   1) Click to select any element.

   2) Right-click and select either **CLEAR ALL ZONES** or **CLEAR ACTIVE ZONE**.

e) Delete zones by doing the following:

   1) Select the zone to be deleted.

   2) Right-click and select **DELETE**.

f) Change the zone colors, see **Zone Management** on page 5-3.

g) Use the Color Management button ( ) to modify the holder, rack, microplate and footprint colors.

h) Change the numbering pattern, see **Numbering Pattern** on page 5-6.

Deleting a Bed Layout

To delete a Bed Layout, do the following:

1 In the Bed Layout utility, click **DELETE BED LAYOUT**. The Delete Bed Layout window appears.

2 Select the Bed Layout.

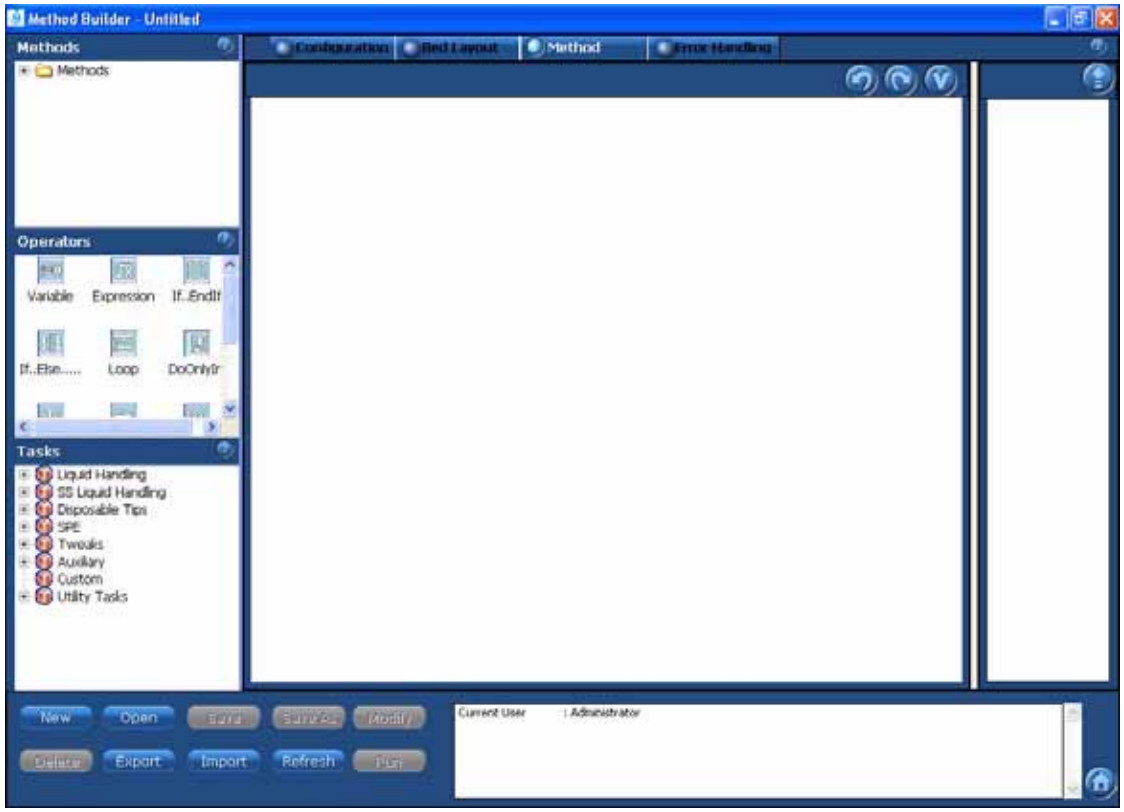
3 Click **DELETE**.

Method Builder - Method 6

This section takes you through the procedures for adding steps to a Method.

Method Tab Window

The Method Tab window is a graphical interface used to set the steps in a Method.



The Method Builder - Method Tab Window

It has the following sections:

Section	*Described on*
Methods Palette	page 6-3
Operators Palette	page 6-3
Tasks Palette	page 6-4
Workspace	page 6-4

Methods Palette

Lists the Methods created.

Operators Palette

Lists the operators, variables, and expressions.

Tasks Palette

Lists the available Tasks by function. For a detailed description of the Tasks, task properties, and a sequence of steps, see any or all of the following appendices:

- ***Appendix A, Tasks - Liquid Handling***
- ***Appendix B, Tasks - SS Liquid Handling***
- ***Appendix C, Tasks - Disposable Tips***
- ***Appendix D, Tasks - SPE***
- ***Appendix E, Tasks - Tweaks***
- ***Appendix F, Tasks - Auxiliary***

Workspace

Lists the Operators, Variables, Expressions, and Tasks used in the Method. The left panel provides the sequence. The right panel contains the details for a selected operator or expression.

Toolbar

Provides quick access to some options available in the Method window. To activate a tool, click on its icon.

Undo/Redo

The Undo ( ) and Redo( ) buttons provide the ability to Undo and Redo the last action within the Method.

Variable List

Lists the available variables for the Method. Click the ( ) button to view the list of variables used in the Method.

Click **NEW VARIABLE** to add additional variables or highlight an existing variable and click **MODIFY**.

Back

The Back button ( ) provides the ability to return focus to the left panel in the workspace.

Right-click menu

Task

Right-click on a Task icon to display the following menu options:

Menu	*Description*
CUT	Cuts the Task for deleting or pasting in a new location in the workspace, in an operator or expression, or in another Method.
COPY	Copies the Task to duplicate in a new location in the workspace, in an operator or expression, or in another Method.

Menu	*Description*
PASTE	Places a cut or copied Task in the workspace, in an operator or expression, or in another Method.
DELETE	Removes the Task from the workspace.
LINE BREAK	A toggle for moving Tasks after the selected Task to the next line below the selected Task.
PROPERTIES	Opens the task property page for the selected Task.
OPEN TASK	Opens the Task in the Task Builder.

Workspace

Right-click in the workspace to display the following menu options:

Menu	*Description*
PASTE	Places a cut or copied Task in the workspace, in an operator or expression, or in another Method.
VIEW EXTENDED	Hides the right panel in the workspace.
VIEW NORMAL	Shows the right panel in the workspace.

Creating a Method

Create a Method by adding new Tasks, Variables, Operators, and Expressions to the workspace.

The drag-and-drop feature allows easy creation of a Method. You can drag and drop Tasks, Variables, Expressions, and Operators into the workspace. Saved Methods are listed in the Methods palette.

A Task is positioned anywhere in the Method Builder workspace, depending on where the Task is dropped.

To create a Method

Do one or both of the following one or many times:

- From the Tasks palette, drag a Task and then drop it in the workspace. The task property page for that Task appears.

  Review the values for each task property and modify, if necessary.

- From the Operators palette, drag an expression, variable, or operator and then drop it in the workspace.

Variables

To make your Method more flexible, you can indicate a variable name instead of entering a value for a property in a Task. A variable name begins with # and can be any combination of letters and numbers and can contain some special characters. Valid variable names would be #FlowRate and #Sample_Vol1.

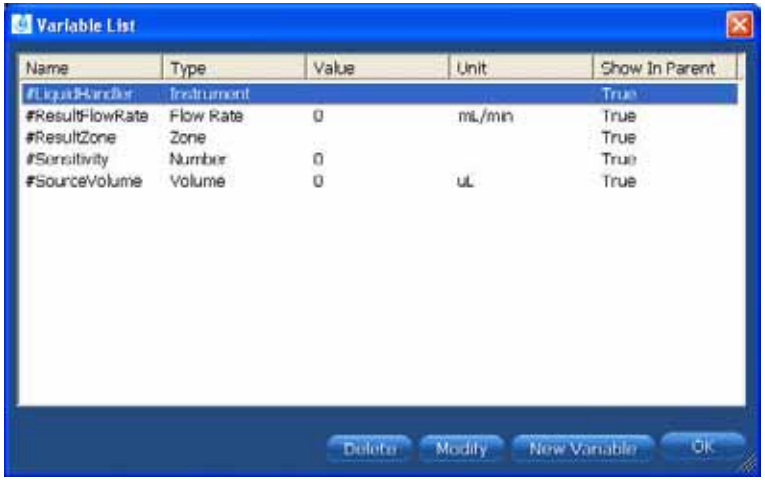
When setting a Sample List for a run, assign values to any undefined variables used by the Method. If the run is started and a value has not been assigned to a variable, the following message will be displayed:

TRILUTION
Invalid entry in Sample List. Application is stopped. Correct the entry and run the Application. See Details for more information.
OK
Details

To see what variable names have been set for the Method and to indicate a default for each variable, do the following.

1 In the Method Builder Method tab window, click the Variable List tool ( ).

2 When the dialog box appears, select the variable and then do any of the following.



- To set a default value for the variable:
  1) Click **MODIFY** or right-click and then select **MODIFY**.
  2) Type a value in the Default Value box.
- To remove an unused variable name, click **DELETE** or right-click and then select **DELETE**.

3 Click **OK** when finished.

Method Builder - Error Handling 7

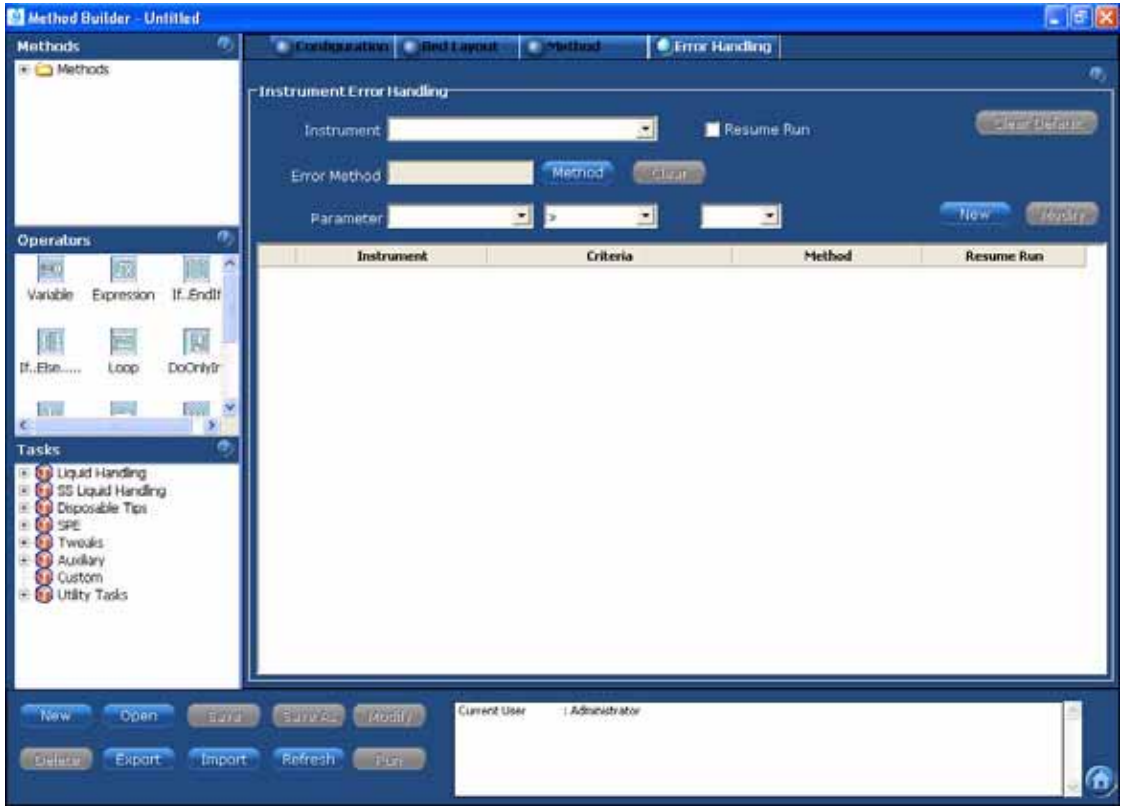
TRILUTION LH can automatically respond to the occurrence of defined errors during a run. To make this happen, set up Methods that tell TRILUTION LH what to do if it encounters one of those errors. The error handling Method should not include an error handling Method and should have error limits that are greater than the control Method error limits.

There are four possible user-defined responses for when a defined error occurs during a run. A description of those responses follows:

- An error handling Method is identified and Resume Run is checked.
- No error handling Method is identified and Resume Run is checked.
- An error handling Method is identified and Resume Run is not checked.
- No error handling Method is identified and Resume Run is not checked.

Error Handling Tab Window

The Error Handling Tab window is used to set error handling parameters.



The Method Builder - Error Handling Tab Window

It has the following sections:

Section	*Described on*
Setting Up Instrument Error Handling	page 7-4
Modifying Instrument Error Handling	page 7-8

Setting Up Instrument Error Handling

1 Select the instrument to monitor from the drop-down list of instruments in the Configuration.

2 Optionally, select an error method to run when this error is encountered.

3 Select the parameter from the drop-down list of possible parameters for the instrument selected.

4 Select a valid mathematical operator (all are listed, though some would not make sense).

5 Type the value to monitor in the field to the right of the mathematical operator.

6 Optionally, select the Resume Run check box.

7 Click **NEW**.

8 Repeat all steps for additional instruments or set up additional parameters for the same instrument.

Parameter Descriptions

Bed Location Error

This error results when a zone or well referenced in a Task or Sample List does not exist in the Bed Layout.

Instrument Error

This error results when any scheduled command fails to execute or if TRILUTION LH loses communication with an instrument.

Refer to the table **Error Responses** on page 7-6 that describes all possible responses post-error.

Wait Time

This error results when an input contact does not occur within the length of time set on this screen. If the wait time is set to zero (0), the system waits indefinitely for the input contact. The valid mathematical operator is greater than or equal to.

Contact Error

This error results when a contact is activated. The valid mathematical operator is == and the valid values are OPEN or CLOSED.

Error Responses

Refer to the following table for information about how TRILUTION LH responds to an error.

Error Responses

Error handling Method identified?	*Resume Run?*	*Response*
Yes	Yes	• Error noted in log • Error Method execution noted in log • Control Method terminates • Error handling method executes • Application Run resumes starting with the next sample in the Sample List • Run Complete notification displays (with errors, see log for details)
No	Yes	• Error noted in log • Control Method terminates • Application Run resumes starting with the next sample in the Sample List • Run Complete notification displays (with errors, see log for details)

Error Responses (Continued)

Error handling Method identified?	*Resume Run?*	*Response*
Yes	No	• Error noted in log • Run terminates • Error handling method executes • Error Method execution noted in log • Run Complete notification displays (with errors, see log for details)
No	No	• Error noted in log • Run terminates • Run Complete notification displays (with errors, see log for details)

Modifying Instrument Error Handling

You can modify instrument error handling by doing the following:

- Setting up error handling for additional instruments in the Configuration.
- Setting up error handling with additional criteria for the same instrument.
- Deleting instruments and/or parameters from the monitored list of criteria.
- Modifying the instruments and/or parameters in the monitored list of criteria.

When you right-click on a row in the table of monitored criteria, a menu is displayed with the option to delete the criteria.

To make a modification, select the row, make the desired changes, and then click **MODIFY**.

Clear Default (Error Name)

When a Method is saved, the Error Handler is named. An option is provided to set that Error Handler as a default for future new Methods. Click **CLEAR DEFAULT** to remove an Error Handler as default.

Application 8

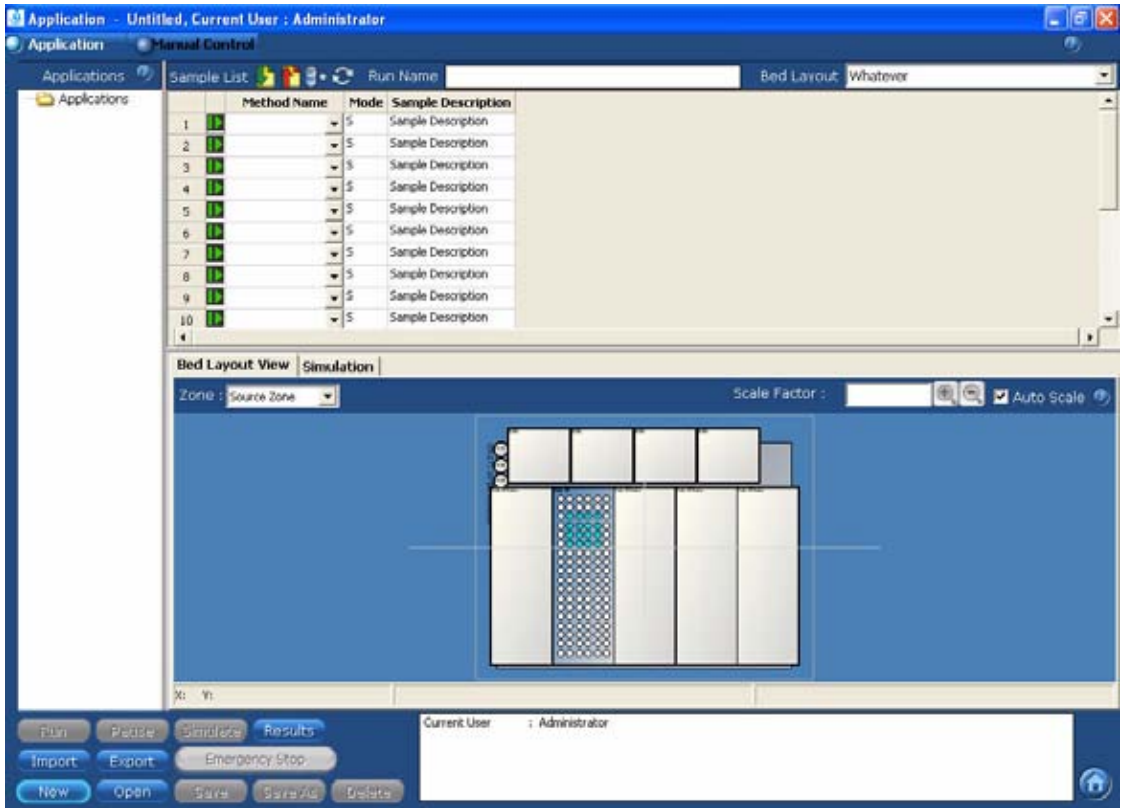
In the Application window, you specify the list of steps, called a Sample List, to execute during a run. A step in the Sample List identifies a sample to be processed and the Method that includes the steps to process that sample. This section describes the components of the Application window and how to generate the Sample List.

Use the Application window to start and monitor the progress of a run. To perform manual control, use the Manual Control as described in ***Appendix 9, Application - Manual Control***.

Application Window

Access the Application window by:

- clicking **APPLICATION** from the Liquid Handling menu
- clicking **RUN** in the Method Builder



The Application Window

Application 8

The Application Window has the following sections:

Section	*Described on*
Title Bar	page 8-3
Applications Palette	page 8-3
Sample List	page 8-6
Bed Layout View	page 8-8
Simulation	page 8-11
Run Indicator	page 8-11
Pressure Indicator	page 8-11
Action Buttons (Application)	page 8-12
Info Window	page 8-13

Title Bar

The Title Bar at the top displays the names of the running Application and the logged on User.

Applications Palette

Lists the Applications created.

Right-click Menu (Application)

Applications palette

Right-click in the Applications palette and the following options are displayed.

Menu	*Description*
NEW FOLDER	Displays the New Folder dialog for creating a new top-level folder.
NEW APPLICATION	Create a new Application.
PASTE APPLICATION	Paste a copied Application in the current folder.

Folder

Right-click on a folder in the Applications palette and the following options are displayed.

Menu	*Description*
NEW FOLDER	Displays the New Folder dialog for creating a new folder in the current folder.
RENAME FOLDER	Rename the current folder.
DELETE FOLDER	Deletes the folder if empty.

Menu	*Description*
NEW APPLICATION	Create a new Application.
PASTE APPLICATION	Paste a copied Application in the current folder.

Application

Right-click on an Application and the following options are displayed.

Menu	*Description*
NEW APPLICATION	Create a new Application.
OPEN APPLICATION	Open an existing Application.
DELETE APPLICATION	Deletes the selected Application or all versions of the Application.
COPY APPLICATION	Copies the Application for pasting in another folder.

Sample List

The Sample List lists the steps to execute during a run. Choose available functions using the icons in the Sample List workspace.

Icon	*Description*
	Imports Sample List (.TSL) files.
	Exports the Sample List to a selected location as a .TSL file
	Set initial volumes for any or all wells in each Bed Layout in the Application.
	Refreshes the Sample List after variables are deleted.

Right-click Menu (Sample List)

Select a row then right-click and the following options are displayed.

Menu	*Description*
ADD ROW	Adds the first row to a new list or adds a row to the bottom of the list
ADD MULTIPLE ROWS	Adds a user-specified number of rows to the bottom of the list
INSERT ROW	Adds a row between two existing rows

Menu	*Description*
CLEAR ROW	Clears a row of all values, but keeps the row in the Sample List
DELETE ROW	Removes a row from the Sample List
OPEN METHOD	Opens the Method in the selected row in the Method Builder
PASTE ROW SPECIAL	Pastes a user-specified number of copies of the selected row after the selected row.

Icon	*Description*
	Run step
	Skip step
	Pause step

Run Name

Type a name for the run (39 characters maximum) that will be used to identify the run in the Results window and in reports. (Defaults to the current date and time at the start of the run.)

Bed Layout

Select a Bed Layout from the drop-down list to filter Methods to choose for the Sample List in the Application.

Bed Layout View

When creating a Sample List, you can view the Bed Layout, select multiple wells, and have TRILUTION LH generate steps in the Sample List.

1 Open the Application window.

2 Place the cursor in the first cell for which you will be selecting a well.

3 Click to select the Bed Layout View tab.

4 Select a Zone from the drop-down list. Available wells appear highlighted in the active zone color.

5 Choose multiple well locations as described following.

To select random wells within one zone:

a) Press the **CTRL** key and select each well.

b) Click **SEQUENTIAL SINGLE**, **SEQUENTIAL MULTIPLE**, or **BATCH**.

1) If **SEQUENTIAL SINGLE**, all wells selected will be added as one row in the Sample List and the mode will be set to Sequential. For more information on sequential processing, see **Sequential** on page 8-17.

2) If **SEQUENTIAL MULTIPLE**, each well selected will be added as its own row in the Sample List and the mode will be set to Sequential. For more information on sequential processing, see **Sequential** on page 8-17.

3) If **BATCH**, all wells selected will be added as one row in the Sample List and the mode will be set to Batch. For more information on batch processing, see **Batch** on page 8-17.

To select a range of wells within one zone:

a) Lasso the range of wells.

b) Click **SEQUENTIAL SINGLE**, **SEQUENTIAL MULTIPLE**, or **BATCH**.

   1) If **SEQUENTIAL SINGLE**, all wells selected will be added as one row in the Sample List and the mode will be set to Sequential. For more information on sequential processing, see **Sequential** on page 8-17.

   2) If **SEQUENTIAL MULTIPLE**, each well selected will be added as its own row in the Sample List and the mode will be set to Sequential. For more information on sequential processing, see **Sequential** on page 8-17.

   3) If **BATCH**, all wells selected will be added as one row in the Sample List and the mode will be set to Batch. For more information on batch processing, see **Batch** on page 8-17.

Simulation

A graphical representation of a Run is referred to as a Simulation.

To simulate a Run

1 Create or Open an Application.
2 Click to select the Simulation tab.
3 In the Set Simulation Speed field, select a speed from the drop-down list.
4 Use the Scale Factor options to zoom, if desired.
5 Click **SIMULATE**.

Run Indicator

The Run Indicator is a graphical representation of the progress of the run.

Pressure Indicator

The Pressure Indicator is used to monitor the pressure of the 406 Pump Single and/or 406 Pump Dual during the run.

Action Buttons (Application)

The following action buttons are located in the lower left corner of the Application window.

Action Button	*Description*
RUN	This option begins the Application run.
PAUSE/RESUME	This option causes the run to pause task execution. To continue the task execution, click **RESUME**. The run will continue as programmed.
SIMULATE	This option begins a graphical representation of the run without moving the instruments.
RESULTS	This option opens the Run Results window. From this window results can be viewed, exported, archived, restored, or refreshed.
IMPORT	Imports a .LHAE file and lists the Application in the Applications palette.
EXPORT	Exports the Application to a specified location as a .LHAE file.
EMERGENCY STOP	Stop the run
NEW	Create a new Application.
OPEN	Open an existing Application.
SAVE	Save an existing Application to the same name.

Action Button	*Description*
SAVE AS	Save a new Application or save an existing Application to a new name. Optionally, type a description.
DELETE	Deletes the open Application or all versions of the Application.

Info Window

Lists run-time events and the time they occurred.

Setting Up a Sample List

The Sample List is an editable grid that specifies how many samples will be run, information about those samples, and qualifies any variables in the associated Methods.

Before you set up a Sample List, create the Methods.

To increment the contents in a column, click in the first cell and drag down through the cells to increment. The cursor displays as a plus sign (+) briefly when the value can be incremented.

To copy the contents of one cell to others in the same column, click in the cell with contents to be copied and then hold CTRL and drag down through the cells to which the contents should be copied. The cursor displays as a plus sign (+) briefly when the value can be copied.

To copy the contents of one row to another, select the row to be copied and then when the cursor changes (), drag and drop the row at the destination.

Not all columns and rows allow copying and incrementing. Refer to the following table.

Column	*Copy Contents of One Cell?*	*Increment Contents in Column?*	*Copy Contents of Row?*
Method Name	NO	NO	**YES**
Mode	**YES**	COPIES	**YES**
Sample Description	**YES**	COPIES	**YES**

Default Columns

When a new Sample List is created, columns for Method Name, Mode, and Sample Description appear by default.

Columns can be shown or hidden. Right-click on a column name and then select the column name from the menu. Doing so toggles the column to hide. Repeat to toggle the column to show.

Columns can be re-sized by dragging the column border in the column header.

Shown columns and selected widths are saved when the Application is saved.

Descriptions of all columns follow.

Method Name

This column is required. Select a Method from the drop-down list of Methods that use the selected Bed Layout. This is the Method that will be used when the selected sample(s) are run.

Mode

This column is required. Right-click the cell to choose the mode. There are two choices (Batch and Sequential) that are described below. The default is Sequential.

Batch

In Batch (B) mode, all samples are processed in order using the first Task in the Method. Then all samples are processed in order using the second Task in the Method, and so on.

Sequential

In Sequential (S) mode, each sample is fully processed using all Tasks in the Method before continuing to the next sample.

Sample Description

This column is optional. Click in the cell and type a name that describes the Sample (default is “Sample Description”).

Additional Columns

Other columns appear depending on the variables set in your Method.

Exporting a Sample List

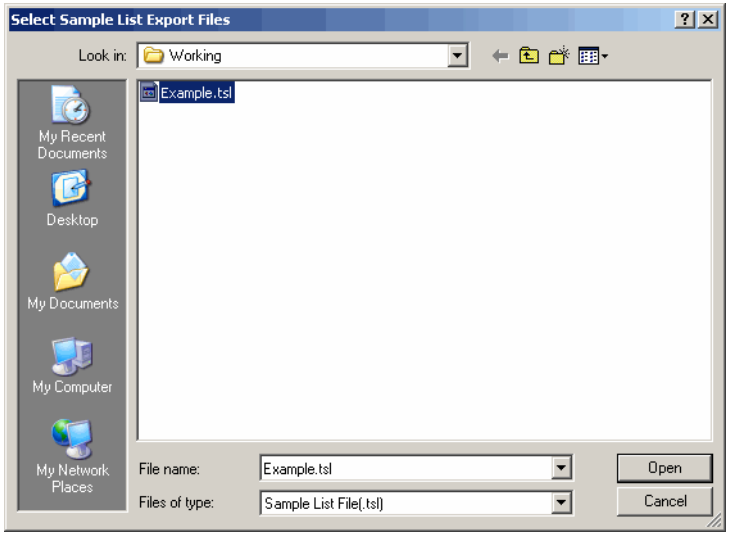
1 On the Application window, click the Sample List Export ( ) button.

2 Select a folder and then click **SAVE**.

The Sample List is saved in the specified folder with a .TSL extension.

Importing a Sample List

1 On the Application window, click the Sample List Import ( ) button.
The Select Sample List Export Files window is displayed.



The Select Sample List Export Files window

2 On the Select Sample List Export Files window, do the following:

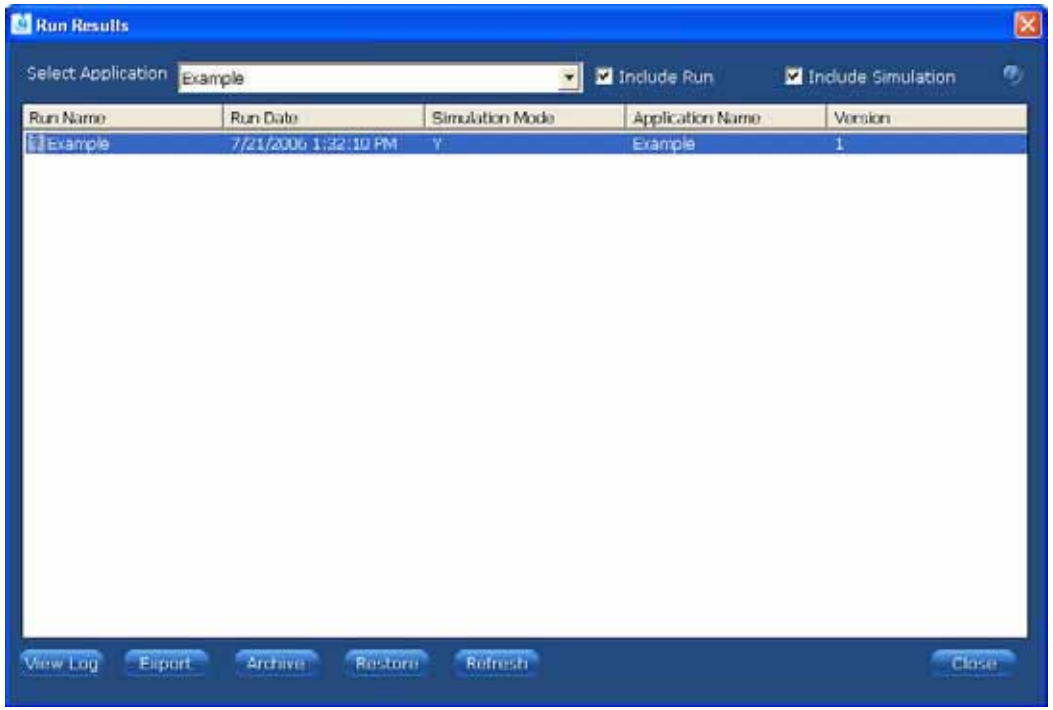
a) Browse for and select the Sample List file.

b) Click **OPEN**.

Make certain that your Sample List matches your Application (same Configuration and Bed Layout).

Run Results Window

Results are accessed by clicking **RUN RESULTS** in the Utilities menu in the Liquid Handling menu or by clicking **RESULTS** in the Application window.



Run Results Window

To sort the run results, click on a column header. To sort in reverse order, click the column header again.

The following action buttons are located in the lower left corner of the Run Results window.

Action Button	*Description*
VIEW LOG	Opens the log file detailing information from the Info Window during the run in Microsoft® Notepad.
EXPORT	Exports a copy of the Results to a specified location as a .LHRE file. To select multiple run results in a sequential order, hold **SHIFT** + any arrow key simultaneously. To select run results in a random order, hold **CTRL** and select multiple run results with the mouse.
ARCHIVE	Moves the Results to a specified location as a .LHRE file. To select multiple run results in a sequential order, hold **SHIFT** + any arrow key simultaneously. To select run results in a random order, hold **CTRL** and select multiple run results with the mouse.
RESTORE	Imports an exported or archived .LHRE file and lists the Result in the Run Results window.
REFRESH	Reloads the window with any new or imported run results.

Result

Double-click the run name to show the result.

Right-click Menu (Run Results)

Menu	*Description*
VIEW LOG	Opens the log file detailing information from the Info Window during the run in Microsoft® Notepad.
RENAME RUN	Assign a different name to a run.
EXPORT RESULT	Exports a copy of the Results to a specified location as a .LHRE file.
ARCHIVE RESULT	Moves the Results to a specified location as a .LHRE file.
RESTORE RESULT	Imports a .LHRE file and lists the Result in the Run Results window.

Exporting a Run

To export a Run

1 On the Run Results window, do one of the following:

- Select the run name and then right-click and select **EXPORT RESULT**.
- Select the run name and then click **EXPORT**.

To select multiple run results in a sequential order, hold SHIFT + any arrow key simultaneously.

To select run results in a random order, hold CTRL and select multiple run results with the mouse.

2 Select a folder and click **SAVE**. On completion of the Export operation, the Run is saved in the specified folder with a .LHRE extension. The TRILUTION information dialog box is displayed.

3 On the TRILUTION information dialog box, do the following:

- To view the log information of the Export operation, click **DETAILS**.
- Click **OK**.

Archiving a Run

You will have to archive run data before the Application can be deleted.

To archive a Run

1 On the Run Results window, select the run name and then do one of the following:

a) Click **ARCHIVE**.

b) Right-click and select **ARCHIVE RESULT**.

To select multiple run results in a sequential order, hold SHIFT + any arrow key simultaneously.

To select run results in a random order, hold CTRL and select multiple run results with the mouse.

The difference between Export and Archive is that Export leaves data in the Application Run Result Dialog, whereas Archive removes it. Both allow the data to be restored.

2 Select a folder and then click **SAVE**. On completion of the Archive operation, the Run is saved in the specified folder with a .LHRE extension. The TRILUTION information dialog box is displayed.

3 On the TRILUTION information dialog box, do the following:

- To view the log information of the Archive operation, click **DETAILS**.
- Click **OK**.

Restoring a Run

You can restore a run that has been exported or archived.

To restore a run

1 On the Run Results window, click **RESTORE**.

2 Browse for and select the Run Archived Files.

To select multiple runs in a sequential order, hold SHIFT + any arrow key simultaneously.

To select runs in a random order, hold CTRL and select multiple runs with the mouse.

3 Click **OPEN**. On completion of the Import operation, the TRILUTION information box is displayed.

If a Task or any Task placed within a Task with the same name is found, an option is provided to import the Task as a new version, import all Tasks as new version, skip the import of all Tasks, or rename the Task.

4 On the TRILUTION information dialog box, do the following:

- To view the log information of the Import operation, click **DETAILS**.
- Click **OK**.

Application - Manual Control 9

In addition to timed runs, TRILUTION LH also provides manual control over system components. Manual control is useful for preparing a system for a run.

Note: Before running your system in manual mode, be sure that the instruments in the system are turned on and the appropriate connections are made as described in each instrument's user's guide.

Manual control is accessed from the Application window.

Manual Control Tab Window

The Manual Control window within the Application is a graphical user interface used to control the instruments within the configuration.

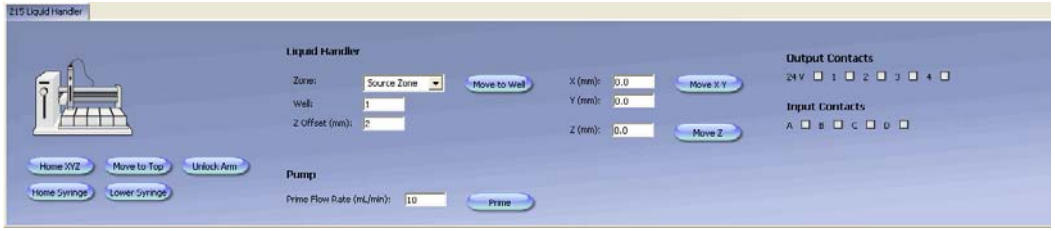
Manual Control Properties by Instrument

Every instrument has a set of manual moves that differ for each instrument.

Instrument Name	*For List of Properties:*
215 Liquid Handler	See page 9-4.
215 Liquid Handler without Pump	See page 9-7.
215 SW Liquid Handler	See page 9-9.
221 XL Liquid Handler	See page 9-11.
222 XL Liquid Handler	See page 9-14.
223 Sample Changer	See page 9-17.
402 Pump Dual	See page 9-19.
402 Pump Dual with Tee	See page 9-21.
402 Pump Single	See page 9-23.
406 Pump Dual	See page 9-25.
406 Pump Single	See page 9-27.
444 QuadDilutor	See page 9-28.

Instrument Name	*For List of Properties:*
506C System Interface	See page 9-30.
819 Injection Module	See page 9-32.
ASPEC XL	See page 9-33.
ASPEC XL4	See page 9-36.
ASPEC XLi	See page 9-40.
GX-271 ASPEC without Pump	See page 9-43.
GX-271 Liquid Handler	See page 9-46.
GX-271 Liquid Handler without Pump	See page 9-50.
GX-274 ASPEC without Pump	See page 9-53.
GX-274 Liquid Handler without Pump	See page 9-56.
GX-281 Liquid Handler	See page 9-59.
Minipuls 3	See page 9-63.
Multiple Probe 215	See page 9-64.
Quad-Z 215	See page 9-67.
SPE 215	See page 9-70.
VALVEMATE	See page 9-73.
VALVEMATE II	See page 9-74.

215 Liquid Handler



The 215 Liquid Handler Manual Control Window

Warning! TRILUTION LH does not validate any values or check for safe movement in Manual Control. Verify entries before clicking any buttons.

215 Liquid Handler Manual Control

Property Name	*Brief Description*	*Default Value*	*Use*
Liquid Handler			
Zone	The zone to move to.		Click **MOVE TO WELL**.
Well	Enter the well number in the zone.	1	
Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Bottom.	2	
X	Enter a number to move to a position to the right of the home position.	0.0 mm	Click **MOVE X Y**.
Y	Enter a number to move to a position forward of the home position.	0.0 mm	

215 Liquid Handler Manual Control Table *(Page 1 of 3)*

215 Liquid Handler Manual Control (Continued)

Property Name	*Brief Description*	*Default Value*	*Use*
Z	Enter a number to move to an absolute Z value.	0.0 mm	Click **MOVE Z**.
Output Contacts			
24V 1 2 3 4	A filled box indicates that the circuit is closed (on). An empty box indicates that the circuit is open (off).		Toggle the contacts open/closed (off/on) by selecting and clearing the boxes.
Input Contacts			
A B C D	A filled box indicates that the circuit is closed. An empty box indicates that the circuit is open.		Monitor status.
Pump			
Prime Flow Rate	The speed at which the reservoir fluid moves into and out of the syringe.	10 mL/min	Click **PRIME** to start or **STOP PRIME** to end.
Buttons			
HOME XYZ	Moves probe to the home position.		
MOVE TO TOP	Positions the probe at the Z Safe Height specified in the Configuration.		

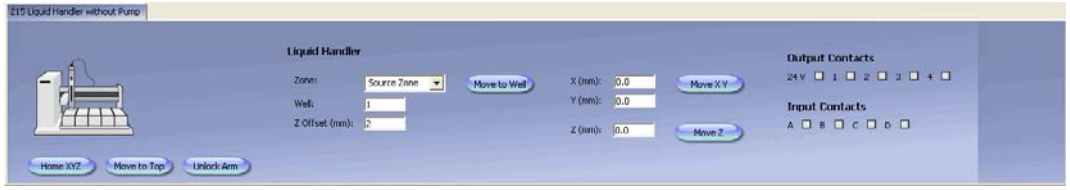
215 Liquid Handler Manual Control Table *(Page 2 of 3)*

215 Liquid Handler Manual Control (Continued)

Property Name	*Brief Description*	*Default Value*	*Use*
UNLOCK ARM	Unpowers the X, Y, and Z motors.		
LOCK ARM	Powers all motors and moves the probe to the home position.		
HOME SYRINGE	Homes the dilutor and sends the piston to the upper position with the valve in the probe position.		
LOWER SYRINGE	Descends the syringe's piston operating rod 25% of a full stroke as the syringe pump aspirates from the reservoir. The valve will switch to the outlet position.		Used when replacing a syringe.
RAISE SYRINGE	Homes the dilutor and sends the piston to the upper position with the valve in the probe position.		

215 Liquid Handler Manual Control Table *(Page 3 of 3)*

215 Liquid Handler without Pump



The 215 Liquid Handler without Pump Manual Control Window

215 Liquid Handler without Pump Manual Control

Property Name	*Brief Description*	*Default Value*	*Use*
Liquid Handler			
Zone	The zone to move to.		Click **MOVE TO WELL.**
Well	Enter the well number in the zone.	1	
Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Bottom.	2 mm	
X	Enter a number to move to a position to the right of the home position.	0.0 mm	Click **MOVE X Y.**
Y	Enter a number to move to a position forward of the home position.	0.0 mm	
Z	Enter a number to move to an absolute Z value.	0.0 mm	Click **MOVE Z.**

215 Liquid Handler without Pump Manual Control Table *(Page 1 of 2)*

215 Liquid Handler without Pump Manual Control (Continued)

Property Name	*Brief Description*	*Default Value*	*Use*
Output Contacts			
24V 1 2 3 4	A filled box indicates that the circuit is closed (on). An empty box indicates that the circuit is open (off).		Toggle the contacts open/closed (off/on) by selecting and clearing the boxes.
Input Contacts			
A B C D	A filled box indicates that the circuit is closed. An empty box indicates that the circuit is open.		Monitor status.
Buttons			
HOME XYZ	Moves probe to the home position.		
MOVE TO TOP	Positions the probe at the Z Safe Height specified in the Configuration.		
UNLOCK ARM	Unpowers the X, Y, and Z motors.		
LOCK ARM	Powers all motors and moves the probe to the home position.		

215 Liquid Handler without Pump Manual Control Table *(Page 2 of 2)*

215 SW Liquid Handler

The 215 SW Liquid Handler Manual Control Window

Warning! TRILUTION LH does not validate any values or check for safe movement in Manual Control. Verify entries before clicking any buttons.

215 SW Liquid Handler Manual Control

Property Name	*Brief Description*	*Default Value*	*Use*
Liquid Handler			
Zone	The zone to move to.		Click **MOVE TO WELL.**
Well	Enter the well number in the zone.	1	
Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Bottom.	2 mm	
X	Enter a number to move to a position to the right of the home position.	0.0 mm	Click **MOVE X Y.**
Y	Enter a number to move to a position forward of the home position.	0.0 mm	

215 SW Liquid Handler Manual Control Table *(Page 1 of 2)*

215 SW Liquid Handler Manual Control (Continued)

Property Name	*Brief Description*	*Default Value*	*Use*
Z	Enter a number to move to an absolute Z value.	0.0 mm	Click **MOVE Z.**
Output Contacts			
24V 1 2 3 4	A filled box indicates that the circuit is closed (on). An empty box indicates that the circuit is open (off).		Toggle the contacts open/closed (off/on) by selecting and clearing the boxes.
Input Contacts			
A B C D	A filled box indicates that the circuit is closed. An empty box indicates that the circuit is open.		Monitor status.
Buttons			
HOME XYZ	Moves probe to the home position.		
MOVE TO TOP	Positions the probe at the Z Safe Height specified in the Configuration.		
UNLOCK ARM	Unpowers the X, Y, and Z motors.		
LOCK ARM	Powers all motors and moves the probe to the home position.		

215 SW Liquid Handler Manual Control Table *(Page 2 of 2)*

221 XL Liquid Handler

The 221 XL Liquid Handler Manual Control Window

Warning! TRILUTION LH does not validate any values or check for safe movement in Manual Control. Verify entries before clicking any buttons.

221 XL Liquid Handler Manual Control

Property Name	*Brief Description*	*Default Value*	*Use*
Liquid Handler			
Zone	The zone to move to.		Click **MOVE TO WELL.**
Well	Enter the well number in the zone.	1	
Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Bottom.	2 mm	
X	Enter a number to move to a position to the right of the home position.	0.0 mm	Click **MOVE X Y.**
Y	Enter a number to move to a position forward of the home position.	0.0 mm	
Z	Enter a number to move to an absolute Z value.	0.0 mm	Click **MOVE Z.**

221 XL Liquid Handler Manual Control Table *(Page 1 of 3)*

221 XL Liquid Handler Manual Control (Continued)

Property Name	*Brief Description*	*Default Value*	*Use*
Relay Outputs			
1 2 3	A filled box indicates that the circuit is closed (on). An empty box indicates that the circuit is open (off).		Toggle the contacts open/closed (off/on) by selecting and clearing the boxes.
Output Contacts			
4 5 6 7 8	A filled box indicates that the circuit is closed (on). An empty box indicates that the circuit is open (off).		Toggle the contacts open/closed (off/on) by selecting and clearing the boxes.
Input Contacts			
1 2 3	A filled box indicates that the circuit is closed. An empty box indicates that the circuit is open.		Monitor status.
Buttons			
HOME XYZ	Moves probe to the home position.		
MOVE TO TOP	Positions the probe at the Z Safe Height specified in the Configuration.		

221 XL Liquid Handler Manual Control Table *(Page 2 of 3)*

221 XL Liquid Handler Manual Control (Continued)

Property Name	*Brief Description*	*Default Value*	*Use*
UNLOCK ARM	Unpowers the X, Y, and Z motors.		
LOCK ARM	Powers all motors and moves the probe to the home position.		

221 XL Liquid Handler Manual Control Table *(Page 3 of 3)*

222 XL Liquid Handler

The 222 XL Liquid Handler Manual Control Window

Warning! TRILUTION LH does not validate any values or check for safe movement in Manual Control. Verify entries before clicking any buttons.

222 XL Liquid Handler Manual Control

Property Name	*Brief Description*	*Default Value*	*Use*
Liquid Handler			
Zone	The zone to move to.		Click **MOVE TO WELL.**
Well	Enter the well number in the zone.	1	
Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Bottom.	2 mm	
X	Enter a number to move to a position to the right of the home position.	0.0 mm	Click **MOVE X Y.**
Y	Enter a number to move to a position forward of the home position.	0.0 mm	

222 XL Liquid Handler Manual Control Table *(Page 1 of 3)*

222 XL Liquid Handler Manual Control (Continued)

Property Name	*Brief Description*	*Default Value*	*Use*
Z	Enter a number to move to an absolute Z value.	0.0 mm	Click **MOVE Z**.
Relay Outputs			
1 2 3	A filled box indicates that the circuit is closed (on). An empty box indicates that the circuit is open (off).		Toggle the contacts open/closed (off/on) by selecting and clearing the boxes.
Output Contacts			
4 5 6 7 8	A filled box indicates that the circuit is closed (on). An empty box indicates that the circuit is open (off).		Toggle the contacts open/closed (off/on) by selecting and clearing the boxes.
Input Contacts			
1 2 3	A filled box indicates that the circuit is closed. An empty box indicates that the circuit is open.		Monitor status.
Buttons			
HOME XYZ	Moves probe to the home position.		

222 XL Liquid Handler Manual Control Table *(Page 2 of 3)*

222 XL Liquid Handler Manual Control (Continued)

Property Name	*Brief Description*	*Default Value*	*Use*
MOVE TO TOP	Positions the probe at the Z Safe Height specified in the Configuration.		
UNLOCK ARM	Unpowers the X, Y, and Z motors.		
LOCK ARM	Powers all motors and moves the probe to the home position.		

222 XL Liquid Handler Manual Control Table *(Page 3 of 3)*

223 Sample Changer

The 223 Sample Changer Manual Control Window

Warning! TRILUTION LH does not validate any values or check for safe movement in Manual Control. Verify entries before clicking any buttons.

223 Sample Changer Manual Control

Property Name	*Brief Description*	*Default Value*	*Use*
Liquid Handler			
Zone	The zone to move to.		Click **MOVE TO WELL**.
Well	Enter the well number in the zone.	1	
Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Bottom.	2 mm	
X	Enter a number to move to a position to the right of the home position.	0.0 mm	Click **MOVE X Y**.
Y	Enter a number to move to a position forward of the home position.	0.0 mm	

223 Sample Changer Manual Control Table *(Page 1 of 2)*

223 Sample Changer Manual Control (Continued)

Property Name	*Brief Description*	*Default Value*	*Use*
Z	Enter a number to move to an absolute Z value.	0.0 mm	Click **MOVE Z.**
Output Contacts			
24V 1 2 3 4	A filled box indicates that the circuit is closed (on). An empty box indicates that the circuit is open (off).		Toggle the contacts open/ closed (off/on) by selecting and clearing the boxes.
Input Contacts			
A B C D	A filled box indicates that the circuit is closed. An empty box indicates that the circuit is open.		Monitor status.
Buttons			
HOME XYZ	Moves probe to the home position.		
MOVE TO TOP	Positions the probe at the Z Safe Height specified in the Configuration.		
UNLOCK ARM	Unpowers the X, Y, and Z motors.		
LOCK ARM	Powers all motors and moves the probe to the home position.		

223 Sample Changer Manual Control Table *(Page 2 of 2)*

402 Pump Dual

The 402 Pump Dual Manual Control Window

Warning! TRILUTION LH does not validate any values or check for safe movement in Manual Control. Verify entries before clicking any buttons.

402 Pump Dual Manual Control

Property Name	*Brief Description*	*Default Value*	*Use*
Active Syringes	The syringes that will be used.	Left Syringe, Right Syringe	Click **PRIME** to start or **STOP PRIME** to end.
Prime Flow Rate	The speed at which the reservoir fluid moves into and out of the syringes.	10 mL/min	
Buttons			
HOME SYRINGE	Homes the dilutor and sends the piston to the upper position with the valve in the probe position.		

402 Pump Dual Manual Control Table *(Page 1 of 2)*

402 Pump Dual Manual Control (Continued)

Property Name	*Brief Description*	*Default Value*	*Use*
LOWER SYRINGE	Descends the active syringe's piston operating rod 25% of a full stroke as the syringe pump aspirates from the reservoir. The valve will switch to the outlet position.		Used when replacing a syringe.
RAISE SYRINGE	Homes the dilutor and sends the piston to the upper position with the valve in the probe position.		

402 Pump Dual Manual Control Table *(Page 2 of 2)*

402 Pump Dual with Tee

402 Pump Dual with Tee Manual Control Window

Warning! TRILUTION LH does not validate any values or check for safe movement in Manual Control. Verify entries before clicking any buttons.

402 Pump Dual with Tee Manual Control

Property Name	*Brief Description*	*Default Value*	*Use*
Prime Flow Rate	The speed at which the reservoir fluid moves into and out of the syringes.	10 mL/min	Click **PRIME** to start or **STOP PRIME** to end.
Buttons			
HOME SYRINGE	Homes the dilutor and sends the piston to the upper position with the valve in the probe position.		

402 Pump Dual with Tee Manual Control Table *(Page 1 of 2)*

402 Pump Dual with Tee Manual Control (Continued)

Property Name	*Brief Description*	*Default Value*	*Use*
LOWER SYRINGE	Descends the syringes' piston operating rods 25% of a full stroke as the syringe pump aspirates from the reservoir. The valve will switch to the outlet position.		Used when replacing a syringe.
RAISE SYRINGE	Homes the dilutor and sends the piston to the upper position with the valve in the probe position.		

402 Pump Dual with Tee Manual Control Table *(Page 2 of 2)*

402 Pump Single

402 Pump Singe Manual Control Window

Warning! TRILUTION LH does not validate any values or check for safe movement in Manual Control. Verify entries before clicking any buttons.

402 Pump Single Manual Control

Property Name	*Brief Description*	*Default Value*	*Use*
Prime Flow Rate	The speed at which the reservoir fluid moves into and out of the syringe.	10 mL/min	Click **PRIME** to start or **STOP PRIME** to end.
Buttons			
HOME SYRINGE	Homes the dilutor and sends the piston to the upper position with the valve in the probe position.		

402 Pump Single Manual Control Table *(Page 1 of 2)*

402 Pump Single Manual Control (Continued)

Property Name	*Brief Description*	*Default Value*	*Use*
LOWER SYRINGE	Descends the syringe's piston operating rod 25% of a full stroke as the syringe pump aspirates from the reservoir. The valve will switch to the outlet position.		Used when replacing a syringe.
RAISE SYRINGE	Homes the dilutor and sends the piston to the upper position with the valve in the probe position.		

402 Pump Single Manual Control Table *(Page 2 of 2)*

406 Pump Dual

The 406 Pump Dual Manual Control Window

Warning! TRILUTION LH does not validate any values or check for safe movement in Manual Control. Verify entries before clicking any buttons.

406 Pump Dual Manual Control

Property Name	*Brief Description*	*Default Value*	*Use*
Active Syringes	The syringes that will be used.	Left Syringe, Right Syringe	Click **PRIME** to start or **STOP PRIME** to end.
Prime Flow Rate	The speed at which the reservoir fluid moves into and out of the syringes.	10 mL/min	
Buttons			
HOME SYRINGE	Homes the dilutor and sends the piston to the upper position with the valve in the probe position.		

406 Pump Dual Manual Control Table *(Page 1 of 2)*

406 Pump Dual Manual Control (Continued)

Property Name	*Brief Description*	*Default Value*	*Use*
LOWER SYRINGE	Descends the active syringe's piston operating rod 25% of a full stroke.		Used when replacing a syringe.
RAISE SYRINGE	Homes the dilutor and sends the piston to the upper position with the valve in the probe position.		

406 Pump Dual Manual Control Table *(Page 2 of 2)*

406 Pump Single

The 406 Pump Single Manual Control Window

Warning! TRILUTION LH does not validate any values or check for safe movement in Manual Control. Verify entries before clicking any buttons.

406 Pump Single Manual Control

Property Name	*Brief Description*	*Default Value*	*Use*
Prime Flow Rate	The speed at which the reservoir fluid moves into and out of the syringe.	10 mL/min	Click **PRIME** to start or **STOP PRIME** to end.
Buttons			
HOME SYRINGE	Homes the dilutor and sends the piston to the upper position with the valve in the probe position.		
LOWER SYRINGE	Descends the syringe's piston operating rod 25% of a full stroke.		Used when replacing a syringe.
RAISE SYRINGE	Homes the dilutor and sends the piston to the upper position with the valve in the probe position.		

406 Pump Single Manual Control

444 QuadDilutor

The 444 QuadDilutor Manual Control Window

Warning! TRILUTION LH does not validate any values or check for safe movement in Manual Control. Verify entries before clicking any buttons.

444 QuadDilutor Manual Control

Property Name	*Brief Description*	*Default Value*	*Use*
Active Syringes	The syringes that will be used.	A, B, C, D	Click **PRIME** to start or **STOP PRIME** to end.
Prime Flow Rate	The speed at which the reservoir fluid moves into and out of the syringes.	10 mL/min	
Buttons			
HOME SYRINGE	Homes the dilutor and sends the piston(s) to the upper position with the valve(s) in the probe position.		

444 QuadDilutor Manual Control Table *(Page 1 of 2)*

444 QuadDilutor Manual Control (Continued)

Property Name	*Brief Description*	*Default Value*	*Use*
LOWER SYRINGE	Descends the active syringe's piston operating rod 25% of a full stroke as the syringe pump aspirates from the reservoir. The valve will switch to the outlet position.		Used when replacing a syringe.
RAISE SYRINGE	Homes the dilutor and sends the piston(s) to the upper position with the valve(s) in the probe position.		

444 QuadDilutor Manual Control Table *(Page 2 of 2)*

506C System Interface

The 506C System Interface Manual Control Window

Warning! TRILUTION LH does not validate any values or check for safe movement in Manual Control. Verify entries before clicking any buttons.

506C System Interface Manual Control

Property Name	*Brief Description*	*Default Value*	*Use*
Output Contacts			
1 2 3 4 5 6	A filled box indicates that the circuit is closed (on). An empty box indicates that the circuit is open (off).		Toggle the contacts open/closed (off/on) by selecting and clearing the boxes.

506C System Interface Manual Control Table *(Page 1 of 2)*

506C System Interface Manual Control (Continued)

Property Name	*Brief Description*	*Default Value*	*Use*
Input Contacts			
A B C D	A filled box indicates that the circuit is closed. An empty box indicates that the circuit is open.		Monitor status.

506C System Interface Manual Control Table *(Page 2 of 2)*

819 Injection Module

819 Injection Module Manual Control Window

Warning! TRILUTION LH does not validate any values or check for safe movement in Manual Control. Verify entries before clicking any buttons.

819 Injection Module Manual Control

Property Name	*Brief Description*	*Default Value*	*Use*
Valve Position	Rotates the valve to the selected position.	Inject	Click **SWITCH.**

819 Injection Module Manual Control

ASPEC XL

The ASPEC XL Manual Control Window

Warning! TRILUTION LH does not validate any values or check for safe movement in Manual Control. Verify entries before clicking any buttons.

ASPEC XL Manual Control

Property Name	*Brief Description*	*Default Value*	*Use*
Zone	The zone to move to.		Click **MOVE TO WELL.**
Well	Enter the well number in the zone.	1	
Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Bottom.	2 mm	
X	Enter a number to move to a position to the right of the home position.	0.0 mm	Click **MOVE X Y.**
Y	Enter a number to move to a position forward of the home position.	0.0 mm	
Z	Enter a number to move to an absolute Z value.	0.0 mm	Click **MOVE Z.**

ASPEC XL Manual Control Table *(Page 1 of 3)*

ASPEC XL Manual Control (Continued)

Property Name	*Brief Description*	*Default Value*	*Use*
Relay Outputs			
1 2 3	A filled box indicates that the circuit is closed (on). An empty box indicates that the circuit is open (off).		Toggle the contacts open/closed (off/on) by selecting and clearing the boxes.
Output Contacts			
4 5 6 7 8	A filled box indicates that the circuit is closed (on). An empty box indicates that the circuit is open (off).		Toggle the contacts open/closed (off/on) by selecting and clearing the boxes.
Input Contacts			
1 2 3	A filled box indicates that the circuit is closed. An empty box indicates that the circuit is open.		Monitor status.
Buttons			
HOME XYZ	Moves probe to the home position.		
MOVE TO TOP	Positions the probe at the Z Safe Height specified in the Configuration.		

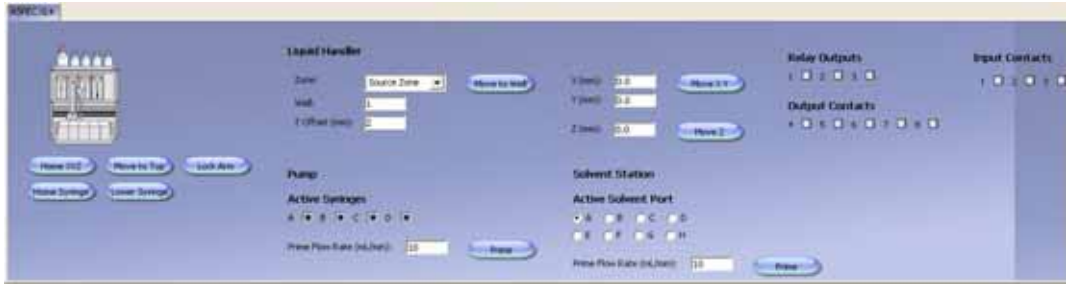
ASPEC XL Manual Control Table *(Page 2 of 3)*

ASPEC XL Manual Control (Continued)

Property Name	*Brief Description*	*Default Value*	*Use*
UNLOCK ARM	Unpowers the X, Y, and Z motors.		
LOCK ARM	Powers all motors and moves the probe to the home position.		

ASPEC XL Manual Control Table *(Page 3 of 3)*

ASPEC XL4



The ASPEC XL4 Manual Control Window

Warning! TRILUTION LH does not validate any values or check for safe movement in Manual Control. Verify entries before clicking any buttons.

ASPEC XL4 Manual Control

Property Name	*Brief Description*	*Default Value*	*Use*
Liquid Handler			
Zone	The zone to move to.		Click **MOVE TO WELL**.
Well	Enter the well number in the zone.	1	
Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Bottom.	2 mm	

ASPEC XL4 Manual Control Table *(Page 1 of 4)*

ASPEC XL4 Manual Control (Continued)

Property Name	*Brief Description*	*Default Value*	*Use*
X	Enter a number to move to a position to the right of the home position.	0.0 mm	Click **MOVE X Y**.
Y	Enter a number to move to a position forward of the home position.	0.0 mm	
Z	Enter a number to move to an absolute Z value.	0.0 mm	Click **MOVE Z**.
Relay Outputs			
1 2 3	A filled box indicates that the circuit is closed (on). An empty box indicates that the circuit is open (off).		Toggle the contacts open/closed (off/on) by selecting and clearing the boxes.
Output Contacts			
4 5 6 7 8	A filled box indicates that the circuit is closed (on). An empty box indicates that the circuit is open (off).		Toggle the contacts open/closed (off/on) by selecting and clearing the boxes.
Input Contacts			
1 2 3	A filled box indicates that the circuit is closed. An empty box indicates that the circuit is open.		Monitor status.

ASPEC XL4 Manual Control Table *(Page 2 of 4)*

ASPEC XL4 Manual Control (Continued)

Property Name	*Brief Description*	*Default Value*	*Use*
Pump			
Active Syringes	The syringes that will be used.	A, B, C, D	Click **PRIME** to start or **STOP PRIME** to end.
Prime Flow Rate	The speed at which the reservoir fluid moves into and out of the syringes.	10 mL/min	
Solvent Station			
Active Solvent Port	The solvent port that will be used.	A	Click **PRIME** to start or **STOP PRIME** to end.
Prime Flow Rate	The speed at which the reservoir fluid moves into and out of the solvent port.	10 mL/min	
Buttons			
HOME XYZ	Moves probe to the home position.		
MOVE TO TOP	Positions the probe at the Z Safe Height specified in the Configuration.		
UNLOCK ARM	Unpowers the X, Y, and Z motors.		
LOCK ARM	Powers all motors and moves the probe to the home position.		
HOME SYRINGE	Homes the dilutor and sends the piston to the upper position with the valve in the probe position.		

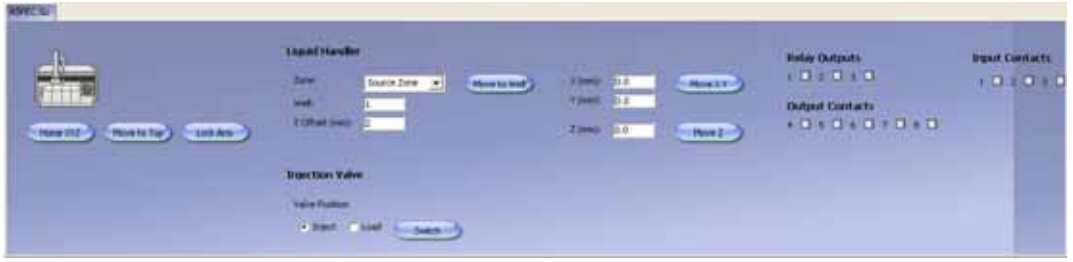
ASPEC XL4 Manual Control Table *(Page 3 of 4)*

ASPEC XL4 Manual Control (Continued)

Property Name	*Brief Description*	*Default Value*	*Use*
LOWER SYRINGE	Descends the syringe's piston operating rod 25% of a full stroke as the syringe pump aspirates from the reservoir. The valve will switch to the outlet position.		Used when replacing a syringe.
RAISE SYRINGE	Homes the dilutor and sends the piston to the upper position with the valve in the probe position.		

ASPEC XL4 Manual Control Table *(Page 4 of 4)*

ASPEC XLi



ASPEC XLi Manual Control Window

Warning! TRILUTION LH does not validate any values or check for safe movement in Manual Control. Verify entries before clicking any buttons.

ASPEC XL4 Manual Control

Property Name	*Brief Description*	*Default Value*	*Use*
Liquid Handler			
Zone	The zone to move to.		Click **MOVE TO WELL**.
Well	Enter the well number in the zone.	1	
Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Bottom.	2 mm	

ASPEC XL4 Manual Control Table *(Page 1 of 3)*

ASPEC XL4 Manual Control (Continued)

Property Name	*Brief Description*	*Default Value*	*Use*
X	Enter a number to move to a position to the right of the home position.	0.0 mm	Click **MOVE X Y.**
Y	Enter a number to move to a position forward of the home position.	0.0 mm	
Z	Enter a number to move to an absolute Z value.	0.0 mm	Click **MOVE Z.**
Relay Outputs			
1 2 3	A filled box indicates that the circuit is closed (on). An empty box indicates that the circuit is open (off).		Toggle the contacts open/closed (off/on) by selecting and clearing the boxes.
Output Contacts			
4 5 6 7 8	A filled box indicates that the circuit is closed (on). An empty box indicates that the circuit is open (off).		Toggle the contacts open/closed (off/on) by selecting and clearing the boxes.

ASPEC XL4 Manual Control Table *(Page 2 of 3)*

ASPEC XL4 Manual Control (Continued)

Property Name	*Brief Description*	*Default Value*	*Use*
Input Contacts			
1 2 3	A filled box indicates that the circuit is closed. An empty box indicates that the circuit is open.		Monitor status.
Injection Valve			
Valve Position	Rotates the valve to the selected position.	Inject	Click **SWITCH**.
Buttons			
HOME XYZ	Moves probe to the home position.		
MOVE TO TOP	Positions the probe at the Z Safe Height specified in the Configuration.		
UNLOCK ARM	Unpowers the X, Y, and Z motors.		
LOCK ARM	Powers all motors and moves the probe to the home position.		

ASPEC XL4 Manual Control Table *(Page 3 of 3)*

GX-271 ASPEC without Pump

The GX-271 ASPEC without Pump Manual Control Window

Warning! TRILUTION LH does not validate any values or check for safe movement in Manual Control. Verify entries before clicking any buttons.

GX-271 ASPEC without Pump Manual Control

Property Name	*Brief Description*	*Default Value*	*Use*
Liquid Handler			
Zone	The zone to move to.		Click **MOVE TO WELL.**
Well	Enter the well number in the zone.	1	
Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Bottom.	2 mm	

GX-271 ASPEC without Pump Manual Control Table *(Page 1 of 3)*

GX-271 ASPEC without Pump Manual Control (Continued)

Property Name	*Brief Description*	*Default Value*	*Use*
X	Enter a number to move to a position to the right of the home position.	0.0 mm	Click **MOVE X Y**.
Y	Enter a number to move to a position forward of the home position.	0.0 mm	
Z	Enter a number to move to an absolute Z value.	0.0 mm	Click **MOVE Z**.
Output Contacts			
1 2	A filled box indicates that the circuit is closed (on). An empty box indicates that the circuit is open (off).		Toggle the contacts open/closed (off/on) by selecting and clearing the boxes.
24V Output Contacts			
1 2	A filled box indicates that the circuit is closed (on). An empty box indicates that the circuit is open (off).		Toggle the contacts open/closed (off/on) by selecting and clearing the boxes.
Input Contacts			
A B	A filled box indicates that the circuit is closed. An empty box indicates that the circuit is open.		Monitor status.

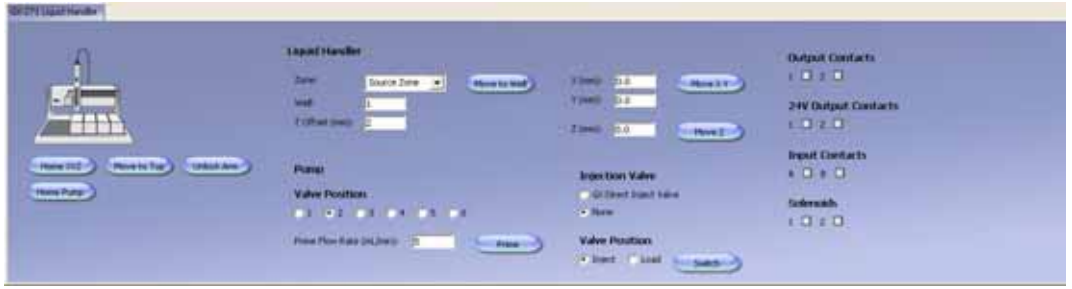
GX-271 ASPEC without Pump Manual Control Table *(Page 2 of 3)*

GX-271 ASPEC without Pump Manual Control (Continued)

Property Name	*Brief Description*	*Default Value*	*Use*
Solenoids			
1 2	A filled box indicates that the solenoid is on. An empty box indicates that the solenoid is off.		Toggle the solenoids off/on by selecting and clearing the boxes.
Injection Valve	Indicate whether a GX Direct Inject Valve is installed	None	
Valve Position	Rotates the valve to the selected position.		Click **SWITCH.**
Buttons			
HOME XYZ	Moves probe to the home position.		
MOVE TO TOP	Positions the probe at the Z Safe Height specified in the Configuration.		
UNLOCK ARM	Unpowers the X, Y, and Z motors.		
LOCK ARM	Powers all motors and moves the probe to the home position.		

GX-271 ASPEC without Pump Manual Control Table *(Page 3 of 3)*

GX-271 Liquid Handler



The GX-271 Liquid Handler Manual Control Window

Warning! TRILUTION LH does not validate any values or check for safe movement in Manual Control. Verify entries before clicking any buttons.

GX-271 Liquid Handler Manual Control

Property Name	*Brief Description*	*Default Value*	*Use*
Liquid Handler			
Zone	The zone to move to.		Click **MOVE TO WELL.**
Well	Enter the well number in the zone.	1	
Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Bottom.	2 mm	

GX-271 Liquid Handler Manual Control Table *(Page 1 of 4)*

GX-271 Liquid Handler Manual Control (Continued)

Property Name	*Brief Description*	*Default Value*	*Use*
X	Enter a number to move to a position to the right of the home position.	0.0 mm	Click **MOVE X Y**.
Y	Enter a number to move to a position forward of the home position.	0.0 mm	
Z	Enter a number to move to an absolute Z value.	0.0 mm	Click **MOVE Z**.
Output Contacts			
1 2	A filled box indicates that the circuit is closed (on). An empty box indicates that the circuit is open (off).		Toggle the contacts open/closed (off/on) by selecting and clearing the boxes.
24V Output Contacts			
1 2	A filled box indicates that the circuit is closed (on). An empty box indicates that the circuit is open (off).		Toggle the contacts open/closed (off/on) by selecting and clearing the boxes.
Input Contacts			
A B	A filled box indicates that the circuit is closed. An empty box indicates that the circuit is open.		Monitor status.

GX-271 Liquid Handler Manual Control Table *(Page 2 of 4)*

GX-271 Liquid Handler Manual Control (Continued)

Property Name	*Brief Description*	*Default Value*	*Use*
Solenoids			
1 2	A filled box indicates that the solenoid is on. An empty box indicates that the solenoid is off.		Toggle the solenoids off/on by selecting and clearing the boxes.
Pump			
Valve Position	Select the solvent selection valve position to use when priming.	2	Click **PRIME.**
Prime Flow Rate	The speed at which the solvent moves out of the probe.	5 mL/min	
Injection Valve	Indicate whether a GX Direct Inject Valve is installed	None	
Valve Position	Rotates the injection valve to the selected position.		Click **SWITCH.**
Buttons			
HOME XYZ	Moves probe to the home position.		
MOVE TO TOP	Positions the probe at the Z Safe Height specified in the Configuration.		
UNLOCK ARM	Unpowers the X, Y, and Z motors.		

GX-271 Liquid Handler Manual Control Table *(Page 3 of 4)*

GX-271 Liquid Handler Manual Control (Continued)

Property Name	*Brief Description*	*Default Value*	*Use*
LOCK ARM	Powers all motors and moves the probe to the home position.		
HOME PUMP	Homes the solvent system.		

GX-271 Liquid Handler Manual Control Table *(Page 4 of 4)*

GX-271 Liquid Handler without Pump

The GX-271 Liquid Handler without Pump Manual Control Window

Warning! TRILUTION LH does not validate any values or check for safe movement in Manual Control. Verify entries before clicking any buttons.

GX-271 Liquid Handler without Pump Manual Control

Property Name	*Brief Description*	*Default Value*	*Use*
Liquid Handler			
Zone	The zone to move to.		Click **MOVE TO WELL.**
Well	Enter the well number in the zone.	1	
Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Bottom.	2 mm	

GX-271 Liquid Handler without Pump Manual Control Table *(Page 1 of 3)*

GX-271 Liquid Handler without Pump Manual Control (Continued)

Property Name	*Brief Description*	*Default Value*	*Use*
X	Enter a number to move to a position to the right of the home position.	0.0 mm	Click **MOVE X Y**.
Y	Enter a number to move to a position forward of the home position.	0.0 mm	
Z	Enter a number to move to an absolute Z value.	0.0 mm	Click **MOVE Z**.
Output Contacts			
1 2	A filled box indicates that the circuit is closed (on). An empty box indicates that the circuit is open (off).		Toggle the contacts open/closed (off/on) by selecting and clearing the boxes.
24V Output Contacts			
1 2	A filled box indicates that the circuit is closed (on). An empty box indicates that the circuit is open (off).		Toggle the contacts open/closed (off/on) by selecting and clearing the boxes.
Input Contacts			
A B	A filled box indicates that the circuit is closed. An empty box indicates that the circuit is open.		Monitor status.

GX-271 Liquid Handler without Pump Manual Control Table *(Page 2 of 3)*

GX-271 Liquid Handler without Pump Manual Control (Continued)

Property Name	*Brief Description*	*Default Value*	*Use*
Solenoids			
1 2	A filled box indicates that the solenoid is on. An empty box indicates that the solenoid is off.		Toggle the solenoids off/on by selecting and clearing the boxes.
Injection Valve	Indicate whether a GX Direct Inject Valve is installed	None	
Valve Position	Rotates the valve to the selected position.	Inject	Click **SWITCH.**
Buttons			
HOME XYZ	Moves probe to the home position.		
MOVE TO TOP	Positions the probe at the Z Safe Height specified in the Configuration.		
UNLOCK ARM	Unpowers the X, Y, and Z motors.		
LOCK ARM	Powers all motors and moves the probe to the home position.		

GX-271 Liquid Handler without Pump Manual Control Table *(Page 3 of 3)*

GX-274 ASPEC without Pump

The GX-274 ASPEC without Pump Manual Control Window

Warning! TRILUTION LH does not validate any values or check for safe movement in Manual Control. Verify entries before clicking any buttons.

GX-274 ASPEC without Pump Manual Control

Property Name	*Brief Description*	*Default Value*	*Use*
Liquid Handler			
Zone	The zone to move to.		Click **MOVE TO WELL**.
Well	Enter the well number in the zone to which probe A will move.	1	
Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Bottom.	2 mm	

GX-274 ASPEC without Pump Manual Control Table *(Page 1 of 3)*

GX-274 ASPEC without Pump Manual Control (Continued)

Property Name	*Brief Description*	*Default Value*	*Use*
X	Enter a number to move to a position to the right of the home position.	0.0 mm	Click **MOVE X Y**.
Y	Enter a number to move to a position forward of the home position.	0.0 mm	
Z	Enter a number to move to an absolute Z value.	0.0 mm	Click **MOVE Z**.
Output Contacts			
1 2	A filled box indicates that the circuit is closed (on). An empty box indicates that the circuit is open (off).		Toggle the contacts open/closed (off/on) by selecting and clearing the boxes.
24V Output Contacts			
1 2	A filled box indicates that the circuit is closed (on). An empty box indicates that the circuit is open (off).		Toggle the contacts open/closed (off/on) by selecting and clearing the boxes.
Input Contacts			
A B	A filled box indicates that the circuit is closed. An empty box indicates that the circuit is open.		Monitor status.

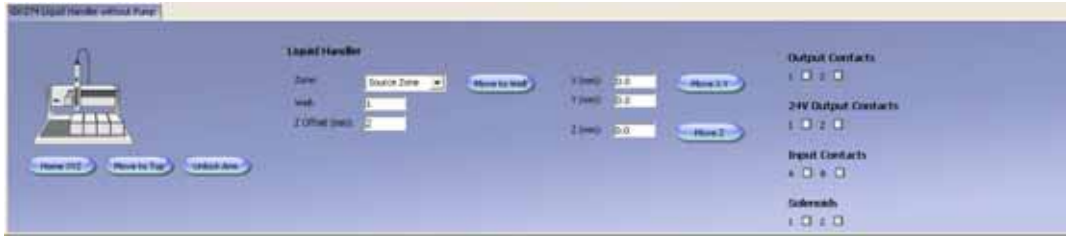
GX-274 ASPEC without Pump Manual Control Table *(Page 2 of 3)*

GX-274 ASPEC without Pump Manual Control (Continued)

Property Name	*Brief Description*	*Default Value*	*Use*
Solenoids			
1 2	A filled box indicates that the solenoid is on. An empty box indicates that the solenoid is off.		Toggle the solenoids off/on by selecting and clearing the boxes.
Buttons			
HOME XYZ	Moves probe to the home position.		
MOVE TO TOP	Positions the probe at the Z Safe Height specified in the Configuration.		
UNLOCK ARM	Unpowers the X, Y, and Z motors.		
LOCK ARM	Powers all motors and moves the probe to the home position.		

GX-274 ASPEC without Pump Manual Control Table *(Page 3 of 3)*

GX-274 Liquid Handler without Pump



The GX-274 Liquid Handler without Pump Manual Control Window

Warning! TRILUTION LH does not validate any values or check for safe movement in Manual Control. Verify entries before clicking any buttons.

GX-274 Liquid Handler without Pump Manual Control

Property Name	*Brief Description*	*Default Value*	*Use*
Liquid Handler			
Zone	The zone to move to.		Click **MOVE TO WELL**.
Well	Enter the well number in the zone to which probe A will move.	1	
Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Bottom.	2 mm	

GX-274 Liquid Handler without Pump Manual Control Table *(Page 1 of 3)*

GX-274 Liquid Handler without Pump Manual Control (Continued)

Property Name	*Brief Description*	*Default Value*	*Use*
X	Enter a number to move to a position to the right of the home position.	0.0 mm	Click **MOVE X Y**.
Y	Enter a number to move to a position forward of the home position.	0.0 mm	
Z	Enter a number to move to an absolute Z value.	0.0 mm	Click **MOVE Z**.
Output Contacts			
1 2	A filled box indicates that the circuit is closed (on). An empty box indicates that the circuit is open (off).		Toggle the contacts open/closed (off/on) by selecting and clearing the boxes.
24V Output Contacts			
1 2	A filled box indicates that the circuit is closed (on). An empty box indicates that the circuit is open (off).		Toggle the contacts open/closed (off/on) by selecting and clearing the boxes.
Input Contacts			
A B	A filled box indicates that the circuit is closed. An empty box indicates that the circuit is open.		Monitor status.

GX-274 Liquid Handler without Pump Manual Control Table *(Page 2 of 3)*

GX-274 Liquid Handler without Pump Manual Control (Continued)

Property Name	*Brief Description*	*Default Value*	*Use*
Solenoids			
1 2	A filled box indicates that the solenoid is on. An empty box indicates that the solenoid is off.		Toggle the solenoids off/on by selecting and clearing the boxes.
Buttons			
HOME XYZ	Moves probe to the home position.		
MOVE TO TOP	Positions the probe at the Z Safe Height specified in the Configuration.		
UNLOCK ARM	Unpowers the X, Y, and Z motors.		
LOCK ARM	Powers all motors and moves the probe to the home position.		

GX-274 Liquid Handler without Pump Manual Control Table *(Page 3 of 3)*

GX-281 Liquid Handler

The GX-281 Liquid Handler Manual Control Window

Warning! TRILUTION LH does not validate any values or check for safe movement in Manual Control. Verify entries before clicking any buttons.

GX-281 Liquid Handler Manual Control

Property Name	*Brief Description*	*Default Value*	*Use*
Liquid Handler			
Zone	The zone to move to.		Click **MOVE TO WELL**.
Well	Enter the well number in the zone.	1	
Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Bottom.	2 mm	

GX-281 Liquid Handler Manual Control Table *(Page 1 of 4)*

GX-281 Liquid Handler Manual Control (Continued)

Property Name	*Brief Description*	*Default Value*	*Use*
X	Enter a number to move to a position to the right of the home position.	0.0 mm	Click **MOVE X Y**.
Y	Enter a number to move to a position forward of the home position.	0.0 mm	
Z	Enter a number to move to an absolute Z value.	0.0 mm	Click **MOVE Z**.
Output Contacts			
1 2 3 4	A filled box indicates that the circuit is closed (on). An empty box indicates that the circuit is open (off).		Toggle the contacts open/closed (off/on) by selecting and clearing the boxes.
24V Output Contacts			
1 2 3 4	A filled box indicates that the circuit is closed (on). An empty box indicates that the circuit is open (off).		Toggle the contacts open/closed (off/on) by selecting and clearing the boxes.

GX-281 Liquid Handler Manual Control Table *(Page 2 of 4)*

GX-281 Liquid Handler Manual Control (Continued)

Property Name	*Brief Description*	*Default Value*	*Use*
Input Contacts			
A B C D	A filled box indicates that the circuit is closed. An empty box indicates that the circuit is open.		Monitor status.
Pump			
Valve Position	Rotates the solvent selection valve to the selected position.	2	Click **PRIME**.
Prime Flow Rate	The speed at which the solvent moves out of the probe.	5 mL/min	
Injection Valve	Indicate which GX Direct Inject Valve is installed, if any.	None	
Valve Position	Rotates the valve to the selected position.	Inject	Click **SWITCH**.
Buttons			
HOME XYZ	Moves probe to the home position.		
MOVE TO TOP	Positions the probe at the Z Safe Height specified in the Configuration.		
UNLOCK ARM	Unpowers the X, Y, and Z motors.		

GX-281 Liquid Handler Manual Control Table *(Page 3 of 4)*

GX-281 Liquid Handler Manual Control (Continued)

Property Name	*Brief Description*	*Default Value*	*Use*
LOCK ARM	Powers all motors and moves the probe to the home position.		
HOME PUMP	Homes the solvent system.		

GX-281 Liquid Handler Manual Control Table *(Page 4 of 4)*

Minipuls 3

The Minipuls 3 Manual Control Window

Warning! TRILUTION LH does not validate any values or check for safe movement in Manual Control. Verify entries before clicking any buttons.

Minipuls 3 Manual Control

Property Name	*Brief Description*	*Default Value*	*Use*
Prime Flow Rate	The speed at which the solvent moves out of the probe.	10 mL/min	Click **PRIME.**

Minipuls 3 Manual Control

Multiple Probe 215

The Multiple Probe 215 Manual Control Window

Warning! TRILUTION LH does not validate any values or check for safe movement in Manual Control. Verify entries before clicking any buttons.

Multiple Probe 215 Manual Control

Property Name	*Brief Description*	*Default Value*	*Use*
Liquid Handler			
Zone	The zone to move to.		Click **MOVE TO WELL**.
Well	Enter the well number in the zone to which probe A will move.	1	
Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Bottom.	2 mm	

Multiple Probe 215 Manual Control Table *(Page 1 of 3)*

Multiple Probe 215 Manual Control (Continued)

Property Name	*Brief Description*	*Default Value*	*Use*
X	Enter a number to move to a position to the right of the home position.	0.0 mm	Click **MOVE X Y**.
Y	Enter a number to move to a position forward of the home position.	0.0 mm	
Z	Enter a number to move to an absolute Z value.	0.0 mm	Click **MOVE Z**.
Output Contacts			
24V 1 2 3 4	A filled box indicates that the circuit is closed (on). An empty box indicates that the circuit is open (off).		Toggle the contacts open/closed (off/on) by selecting and clearing the boxes.
Input Contacts			
A B C D	A filled box indicates that the circuit is closed. An empty box indicates that the circuit is open.		Monitor status.
Pump			
Prime Flow Rate	The speed at which the reservoir fluid moves into and out of the syringes.	10 mL/min	Click **PRIME** to start or **STOP PRIME** to end.

Multiple Probe 215 Manual Control Table *(Page 2 of 3)*

Multiple Probe 215 Manual Control (Continued)

Property Name	*Brief Description*	*Default Value*	*Use*
Buttons			
HOME XYZ	Moves probes to the home position.		
MOVE TO TOP	Positions the probes at the Z Safe Height specified in the Configuration.		
UNLOCK ARM	Unpowers the X, Y, and Z motors.		
LOCK ARM	Powers all motors and moves the probes to the home position.		
HOME SYRINGE	Homes the dilutor and sends the pistons to the upper position with the valves in the probe position.		
LOWER SYRINGE	Descends the syringes' piston operating rods 25% of a full stroke as the syringe pump aspirates from the reservoir. The valves will switch to the outlet position.		Used when replacing a syringe.
RAISE SYRINGE	Homes the dilutor and sends the pistons to the upper position with the valves in the probe position.		

Multiple Probe 215 Manual Control Table *(Page 3 of 3)*

Quad-Z 215

The Quad-Z 215 Manual Control Window

Warning! TRILUTION LH does not validate any values or check for safe movement in Manual Control. Verify entries before clicking any buttons.

Quad-Z 215 Manual Control

Property Name	*Brief Description*	*Default Value*	*Use*
Liquid Handler			
Active Probes	The probes that will be used.	A, B, C, D	
Zone	The zone to move to.		Click **MOVE TO WELL.**
Well	Enter the well number in the zone.	1	
Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Bottom.	2 mm	

Quad-Z 215 Manual Control Table *(Page 1 of 3)*

Quad-Z 215 Manual Control (Continued)

Property Name	*Brief Description*	*Default Value*	*Use*
X	Enter a number to move to a position to the right of the home position.	0.0 mm	Click **MOVE X Y**.
Y	Enter a number to move to a position forward of the home position.	0.0 mm	
Z	Enter a number to move to an absolute Z value.	0.0 mm	Click **MOVE Z**.
Output Contacts			
24V 1 2 3 4	A filled box indicates that the circuit is closed (on). An empty box indicates that the circuit is open (off).		Toggle the contacts open/closed (off/on) by selecting and clearing the boxes.
Input Contacts			
A B C D	A filled box indicates that the circuit is closed. An empty box indicates that the circuit is open.		Monitor status.
Probe Spacing	Enter a value between 9.0 and 18.0.	9.0 mm	
Buttons			

Quad-Z 215 Manual Control Table *(Page 2 of 3)*

Quad-Z 215 Manual Control (Continued)

Property Name	*Brief Description*	*Default Value*	*Use*
HOME XYZ	Moves probe to the home position.		
MOVE TO TOP	Positions the probe at the Z Safe Height specified in the Configuration.		
UNLOCK ARM	Unpowers the X, Y, and Z motors.		
LOCK ARM	Powers all motors and moves the probe to the home position.		

Quad-Z 215 Manual Control Table ***(Page 3 of 3)***

SPE 215

The SPE 215 Manual Control Window

Warning! TRILUTION LH does not validate any values or check for safe movement in Manual Control. Verify entries before clicking any buttons.

SPE 215 Manual Control

Property Name	*Brief Description*	*Default Value*	*Use*
Liquid Handler			
Zone	The zone to move to.		Click **MOVE TO WELL**.
Well	Enter the well number in the zone.	1	
Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Bottom.	2 mm	

SPE 215 Manual Control Table *(Page 1 of 3)*

SPE 215 Manual Control (Continued)

Property Name	*Brief Description*	*Default Value*	*Use*
X	Enter a number to move to a position to the right of the home position.	0.0 mm	Click **MOVE X Y**.
Y	Enter a number to move to a position forward of the home position.	0.0 mm	
Z	Enter a number to move to an absolute Z value.	0.0 mm	Click **MOVE Z**.
Output Contacts			
24V 1 2 3 4	A filled box indicates that the circuit is closed (on). An empty box indicates that the circuit is open (off).		Toggle the contacts open/closed (off/on) by selecting and clearing the boxes.
Input Contacts			
A B C D	A filled box indicates that the circuit is closed. An empty box indicates that the circuit is open.		Monitor status.
Pump			
Prime Flow Rate	The speed at which the reservoir fluid moves into and out of the syringe.	10 mL/min	Click **PRIME** to start or **STOP PRIME** to end.

SPE 215 Manual Control Table *(Page 2 of 3)*

SPE 215 Manual Control (Continued)

Property Name	*Brief Description*	*Default Value*	*Use*
Buttons			
HOME XYZ	Moves probe to the home position.		
MOVE TO TOP	Positions the probe at the Z Safe Height specified in the Configuration.		
UNLOCK ARM	Unpowers the X, Y, and Z motors.		
LOCK ARM	Powers all motors and moves the probe to the home position.		
HOME SYRINGE	Homes the dilutor and sends the pistons to the upper position with the valves in the probe position.		
LOWER SYRINGE	Descends the syringes' piston operating rods 25% of a full stroke as the syringe pump aspirates from the reservoir. The valves will switch to the outlet position.		Used when replacing a syringe.
RAISE SYRINGE	Homes the dilutor and sends the pistons to the upper position with the valves in the probe position.		

SPE 215 Manual Control Table *(Page 3 of 3)*

VALVEMATE

The VALVEMATE Manual Control Window

Warning! TRILUTION LH does not validate any values or check for safe movement in Manual Control. Verify entries before clicking any buttons.

VALVEMATE Manual Control

Property Name	*Brief Description*	*Default Value*	*Use*
Valve	The number of ports in the VALVEMATE valve.	2	
Position	Rotates the valve to the selected position.	1	Click **SWITCH**.
Button			
HOME VALVE	Rotates the valve to home position (1).		

VALVEMATE Manual Control

VALVEMATE II

The VALVEMATE II Manual Control Window

Warning! TRILUTION LH does not validate any values or check for safe movement in Manual Control. Verify entries before clicking any buttons.

VALVEMATE II Manual Control

Property Name	*Brief Description*	*Default Value*	*Use*
Valve	The number of ports in the VALVEMATE valve.	2	
Position	Rotates the valve to the selected position.	1	Click **SWITCH**.
Button			
HOME VALVE	Rotates the valve to the position selected in the Configuration.		

VALVEMATE II Manual Control

Manual Instrument Control

For manual control to occur, TRILUTION LH needs the Configuration and Bed Layout information set in the Method.

Use the following procedures to set which Method information will be used for manual control.

1 Open an Application.

2 Select the Manual Control tab.

3 Select a Method from the drop-down list of Methods in the open Application.

4 Click **GO**. The instruments will initialize.

Working with Variables 10

Variables accept run time values to perform actions.

Variables

A Variable is a named container that accepts values for the properties specified at the Task level or Method level. Variables can be defined for the following:

- Commands
- Loops
- Expressions
- Conditional Operators
- Unconditional Operators
- Tasks

The New Variable Dialog

Creating a New Variable

1 From the Operators palette, drag and drop the Variable operator into the Workspace. The Variable List window displays.

2 In the Variable List window, click **NEW VARIABLE**. The Variable dialog appears.

3 In the Variable dialog, do the following:

   a) In the Variable Name field, type a unique Variable name.

   b) Select a Variable Type from the drop-down provided.

   c) Select or type the default value for the Variable Type.

   d) Select 'Show In Parent' to display the Variable in the Method Builder (if creating a Task variable) or in the Sample List (if creating a Method variable).

   e) Select 'Auto Increment in Sample List' to advance one well in each iteration that uses the variable. This option only functions for Variable Type Well.

   f) Optionally, add values to the Value List by typing the value and then clicking **ADD**. Values entered in this list display as drop-down values in the Task or Method in which the variable is used.

4 Do one of the following:

   - Click **NEW** to add additional variables.
   - Click **OK** to exit the Variable window.

Viewing and/or modifying variable properties

1 Click the Variable List icon ( ).
2 Select a variable from the variable list and do one of the following:
   - Double-click the variable.
   - Right-click on the variable and choose **MODIFY** from the submenu.
   - Click **MODIFY**.

The Variable window displays information for the variable.

Deleting variables

1 Click the Variable List icon ( ).
2 Select a variable from the variable list and do one of the following:
   - Right-click on the variable and choose **DELETE** from the submenu.
   - Click **DELETE**.
   - Press the **DELETE** key on the keyboard.

The selected Variable is deleted.

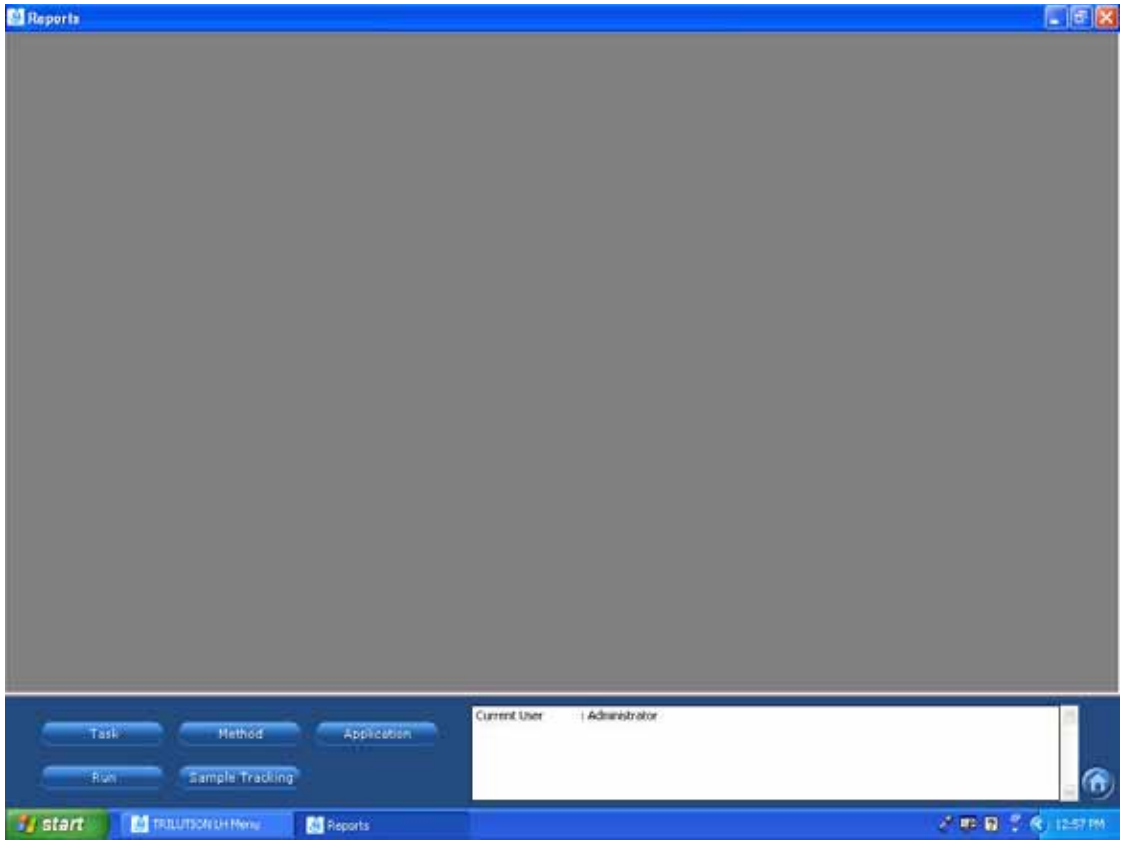
Generating Reports 11

The Reports menu is used to generate reports. You can view and print reports directly or export them to rich text format (*.rtf), Adobe® PDF (*.pdf), Microsoft® Word (*.doc), or Microsoft® Excel (*.xls) file types for further study and formatting.

The Reports Window

To open a Report window

On the Liquid Handling Menu, click **REPORTS**. The Reports window is displayed.



The Reports Window

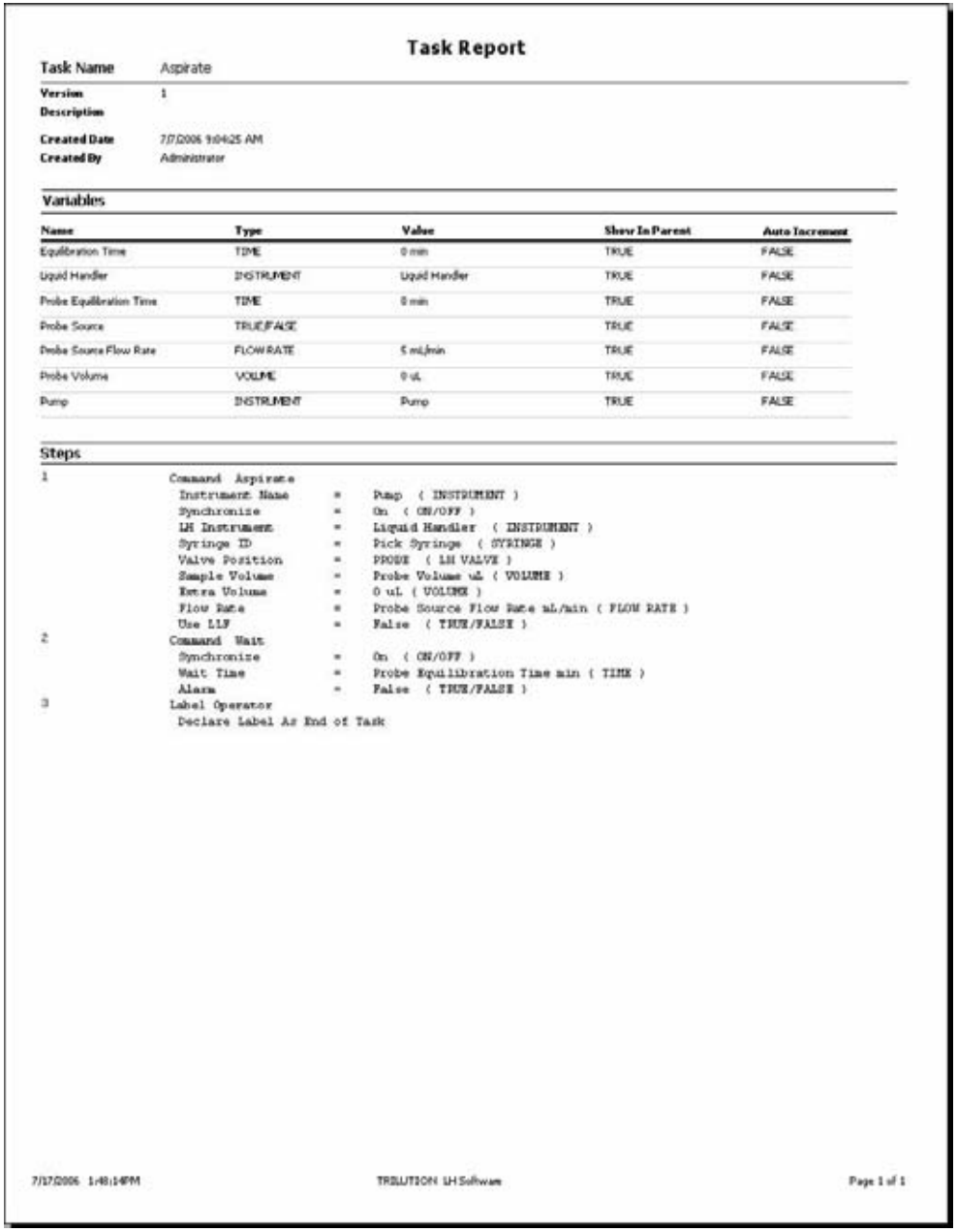
Reports Overview

You can generate the following types of reports:

Report	*Description*
Task	This report comprises three parts: a brief summation of the task information (name, version, description, modified date, and created date), variables defined for the task (Variables), and the un-timed, sequential steps (Steps).
Method	This report comprises six parts: a brief summation of the method information (name, version, description, created date, and created by), configuration information, bed layout information (racks used), variables, steps, and error handling.
Application	This report comprises two parts: a brief summation of the application information (application name and version, created by, created date, and description) and sample list details (including values for variables).
Run	This report comprises three parts: a brief summation of the application run information (application name, application version, run name, run date, run by, and run mode), sample list details (including values for variables) captured at the end of the run and log information.
Sample Tracking	This report comprises a brief summation of the application run information (application name and version, run name, run date, run by, and run mode) and the aspirate and dispense actions for each sample.

Task Report

This report comprises three parts: a brief summation of the task information (name, version, description, modified date, and created date), variables defined for the task (Variables), and the un-timed, sequential steps (Steps). Refer to the example on the next page.



Task Report

Task Name Aspirate

Version 1
Description

Created Date 7/7/2006 9:04:25 AM
Created By Administrator

Variables

Name	Type	Value	Show In Parent	Auto Increment
Equilibration Time	TIME	0 min	TRUE	FALSE
Liquid Handler	INSTRUMENT	Liquid Handler	TRUE	FALSE
Probe Equilibration Time	TIME	0 min	TRUE	FALSE
Probe Source	TRUE/FALSE		TRUE	FALSE
Probe Source Flow Rate	FLOW RATE	5 mL/min	TRUE	FALSE
Probe Volume	VOLUME	0 uL	TRUE	FALSE
Pump	INSTRUMENT	Pump	TRUE	FALSE

Steps

```
1          Command  Aspirate
            Instrument Name      =   Pump  ( INSTRUMENT )
            Synchronize          =   On  ( ON/OFF )
            LH Instrument        =   Liquid Handler  ( INSTRUMENT )
            Syringe ID           =   Pick Syringe  ( SYRINGE )
            Valve Position       =   PROBE  ( LH VALVE )
            Sample Volume        =   Probe Volume uL ( VOLUME )
            Extra Volume         =   0 uL ( VOLUME )
            Flow Rate            =   Probe Source Flow Rate uL/min ( FLOW RATE )
            Use LLF              =   False  ( TRUE/FALSE )
2          Command  Wait
            Synchronize          =   On  ( ON/OFF )
            Wait Time            =   Probe Equilibration Time min ( TIME )
            Alarm                =   False  ( TRUE/FALSE )
3          Label Operator
            Declare Label As End of Task
```

7/17/2006 1:48:14PM TRILUTION LH Software Page 1 of 1

Application Report

This report comprises two parts: a brief summation of the application information (application name and version, created by, created date, and description) and sample list details (including values for variables).

Run Report

This report comprises three parts: a brief summation of the application run information (application name, application version, run name, run date, run by, and run mode), sample list details (including values for variables) captured at the end of the run and log information.

Method Report

This report comprises six parts: a brief summation of the method information (name, version, description, created date, and created by), configuration information, bed layout information (racks used), variables, steps, and error handling.

Sample Tracking Report

This report comprises a brief summation of the application run information (application name and version, run name, run date, run by, and run mode) and the aspirate and dispense actions for each sample.

View a Report

In the Reports window, select the button that corresponds to the report to be viewed.

Select the parameters for the report from the drop-down menu(s).

Viewing Toolbar

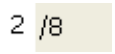
The toolbar provides quick access to the viewing features of the Reports window.

The Export button exports the report to a file type.

The Print button prints the report.

The Refresh button refreshes the report.

The Page buttons allow the user to move between the pages of the report



The Go To Page option allows the user to select a specific page in the report to view.

The Find Text option allows the user to search for a word in sub-reports.

The Zoom option allows the user to zoom in on or out on the report.

Export a Report

1 On the Reports window, click the Export ( ) button. The Export Report window is displayed.

2 Select a destination folder so that it appears in the Save in box.

3 Type a file name into the File name box.

4 Select the file type from the Save as type box, by clicking on the down arrow and then selecting the format.

5 Click **SAVE** to save the document. A message box will indicate when the export has completed.

Tasks - Liquid Handling

A

Gilson supplies Liquid Handling tasks for use on all liquid handlers, with the following exceptions:

- GX-271 Liquid Handler (with Solvent System). Use SS Liquid Handling tasks (see ***Appendix B, Tasks - SS Liquid Handling***).
- GX-281 Liquid Handler (with Solvent System). Use SS Liquid Handling tasks (see ***Appendix B, Tasks - SS Liquid Handling***).
- Quad-Z 215 with Disposable Tips. Use Disposable Tips tasks (see ***Appendix C, Tasks - Disposable Tips***).

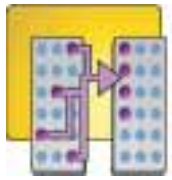
The Inject task can only be used on single-probe liquid handlers that use an injection module.

The Prime 402 Dual with Tee task can only be used when the 402 Dual with Tee is the pump.

The Prime Transfer Ports task can only be used with the ASPEC XL4, the GX-274 ASPEC without Pump, and the GX-274 Liquid Handler without Pump.

Liquid Handling

Liquid Handling Tasks

	Gilson Task Name and Description
	Add This task aspirates the specified volume of liquid (source) from the reservoir, tray, or transfer ports and another liquid (solution) from the tray and then dispenses the combined volume to the wells of the result zone.
	Aliquot This task aspirates the liquid (source) from the reservoir, tray, or transfer ports and then dispenses that liquid equally to each of the wells of the result zone. This task should be used in Batch mode only.
	Cherry Pick This task transfers liquid (source) from wells in the source zone to a sequence of wells (beginning with the starting well) in the result zone.
	Derivatize This task performs an add (aspirates the specified volume of liquid (source) from the reservoir, tray, or transfer ports and another liquid (solution) from the tray and then dispenses the combined volume to the wells of the result zone) and then mixes with liquid or air.

Liquid Handling Tasks Table *(Page 1 of 3)*

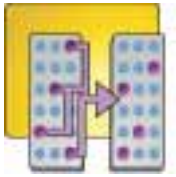
Liquid Handling Tasks (Continued)

Dilute

This task aspirates the specified volume of liquid (source) from the tray and another liquid (diluent) from the reservoir, tray, or transfer ports and then dispenses the combined volume to the wells of the result zone.

Dispense

This task aspirates the specified volume of liquid (source) from the reservoir, tray, or transfer ports and then dispenses the volume to the wells of the result zone.



Dispense Random to Random

This task transfers liquid (source) from wells in the source zone to random wells in the result zone.

Inject

This task aspirates the specified volume of liquid (source), switches the injection valve to LOAD, dispenses the volume to the wells of the injection zone, and then switches the injection valve to INJECT.

Mix

This task aspirates air or liquid and then dispenses it into a well a specified number of times.

Liquid Handling Tasks Table *(Page 2 of 3)*

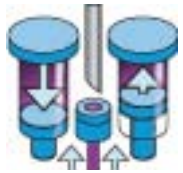
Liquid Handling Tasks (Continued)

Prime 402 Dual with Tee

This task primes the 402 Pump Dual with Tee in the specified zone. It aspirates the full syringe capacity (for each syringe) and dispenses it to the wells in the result zone the specified number of cycles.

Prime Pump

This task primes the pump in the specified zone. It aspirates the specified volume (or the syringe capacity) from the reservoir and then dispenses to the wells in the result zone.



Prime Transfer Ports

This task primes the transfer ports on ASPEC XL4 or GX-274. It aspirates the specified volume (or the syringe capacity) from the transfer port and then dispenses to the wells of the Inside Rinse Zone.

Rinse Probes

This task rinses the inside and outside of the probe using liquid from the pump reservoir.

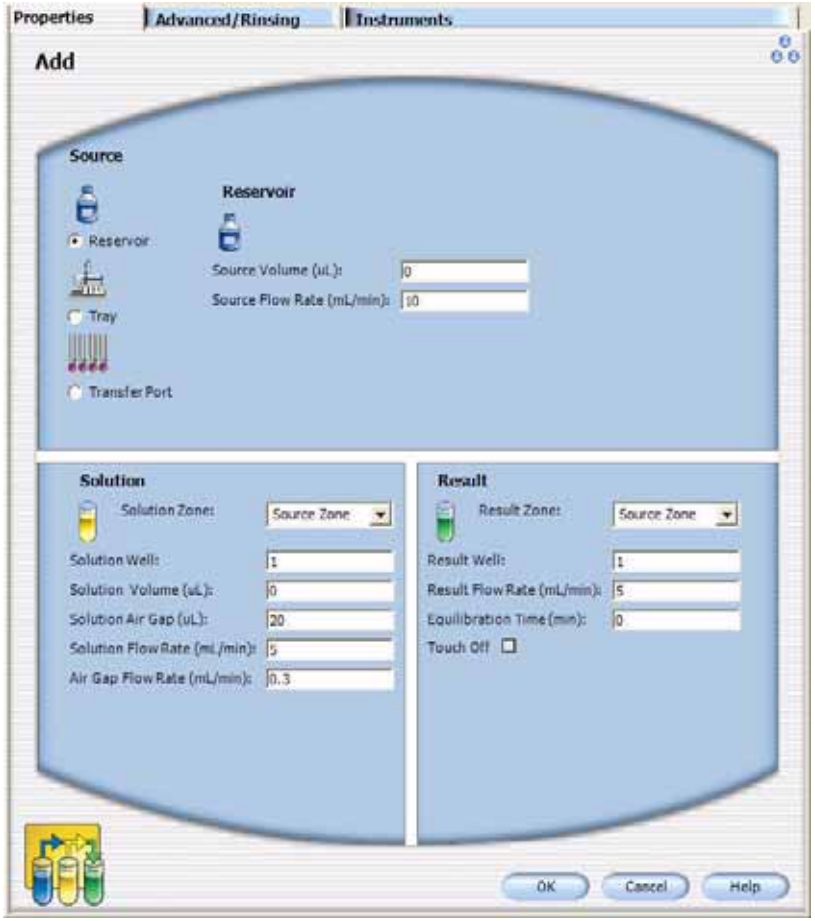
Transfer

This task aspirates the specified volume of liquid (source) from the reservoir, tray, or transfer ports and then dispenses the volume to the wells of the result zone.

Liquid Handling Tasks Table *(Page 3 of 3)*

Add

This task aspirates the specified volume of liquid (source) from the reservoir, tray, or transfer ports and another liquid (solution) from the tray and then dispenses the combined volume to the wells of the result zone.



For more information about the properties on each tab, see:

Add - Properties on page A-6

Add - Advanced/Rinsing on page A-9

Add - Instruments on page A-11

Add - Sequence of Steps on page A-12

Add - Properties

Property Name	*Brief Description*	*Default Value*
Source	Select Reservoir, Tray, or Transfer Port.	Reservoir
Reservoir Source Volume	The quantity of a sample.	0 uL
Reservoir Source Flow Rate	The speed at which the Source Volume moves into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	10 mL/min
Tray Source Zone	The zone from which the Source Volume is drawn.	
Tray Source Well	The well in the Source Zone from which the Source Volume is drawn. When using a multiple-probe instrument, type #x where x is a value defined in the Sample List.	1
Tray Source Volume	The quantity of a sample.	0 uL
Tray Extra Volume	An additional volume to the Source Volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/reservoir solvent and the Source Volume.	0 uL
Tray Source Air Gap	The quantity of the air gap aspirated before the Source Volume.	20 uL
Tray Source Flow Rate	The speed at which the Source Volume and Extra Volume move into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93	5 mL/min

Add - Properties Table *(Page 1 of 4)*

Add - Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Tray Air Gap Flow Rate	The speed at which the Source Air Gap moves into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	0.3 mL/min
Transfer Port Source Zone	The zone designated for the transfer ports from which the Source Volume is drawn.	
Transfer Port Transfer Port	The transfer port in the Source Zone from which the Source Volume is drawn.	A
Transfer Port Source Volume	The quantity of a sample.	0 uL
Transfer Port Extra Volume	An additional volume to the Source Volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/reservoir solvent and the Source Volume.	0 uL
Transfer Port Source Air Gap	The quantity of the air gap aspirated before the Source Volume.	20 uL
Transfer Port Source Flow Rate	The speed at which the Source Volume and Extra Volume move into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	5 mL/min
Transfer Port Air Gap Flow Rate	The speed at which the Source Air Gap moves into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	0.3 mL/min

Add - Properties Table *(Page 2 of 4)*

Add - Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Solution Zone	The zone from which the Solution Volume is drawn.	
Solution Well	The well in the Solution Zone from which the Solution Volume is drawn. When using a multiple-probe instrument, type #x where x is a value defined in the Sample List.	1
Solution Volume	The quantity of solution.	0 uL
Solution Air Gap	The quantity of the air gap aspirated before the Solution Volume.	20 uL
Solution Flow Rate	The speed at which the Solution Volume moves into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	5 mL/min
Air Gap Flow Rate	The speed at which the Solution Air Gap moves into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	0.3 mL/min
Result Zone	The zone to which the Source and Solution Volumes are delivered.	
Result Well	The well in the Result Zone to which the Source and Solution Volumes are delivered. When using a multiple-probe instrument, type #x where x is a value defined in the Sample List.	1
Result Flow Rate	The speed at which the Source and Solution Volumes move out of the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	5 mL/min

Add - Properties Table ***(Page 3 of 4)***

Add - Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Equilibration Time	Time the program waits after each dispense before moving out of the well.	0 min
Touch Off	Select Touch Off to move to the edge of the well after dispensing (in the X direction).	

Add - Properties Table *(Page 4 of 4)*

Add - Advanced/Rinsing

Property Name	*Brief Description*	*Default Value*
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated and up while it is dispensed. This selection changes the reference point for the Source Height, Solution Height, and Result Height to the liquid surface. Initial Volumes should be set in the Sample List when using this option.	
Liquid Level Detection	When selected, the probe will stop when the instrument detects the liquid surface. This selection changes the reference point for the Source Height, Solution Height, and Result Height to the height at which the liquid was detected. **Note:** If no liquid is detected, the probe will go to the bottom of the tube. This option can only be used on instruments that support Liquid Level Detection.	
Sensitivity	Sensitivity is used to detect liquid when Liquid Level Detection is used. A low setting is the most sensitive and higher settings are less sensitive. Range is dependent on the instrument; consult the instrument's user's guide.	1

Add - Advanced/Rinsing Table *(Page 1 of 3)*

Add - Advanced/Rinsing (Continued)

Property Name	*Brief Description*	*Default Value*
Source Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from a defined reference point (Tube Bottom unless Liquid Level Detection or Liquid Level Following is selected) when aspirating the Source Volume.	2 mm
Solution Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from a defined reference point (Tube Bottom unless Liquid Level Detection or Liquid Level Following is selected) when aspirating the Solution Volume.	2 mm
Result Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the defined reference point (Tube Bottom unless Liquid Level Detection or Liquid Level Following is selected) when delivering to the Result Zone.	2 mm
Inside Rinse Zone	The zone to which the Inside Volume is delivered.	Inside Rinse
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
Inside Volume	The quantity of liquid used to rinse the inside of the probe.	250 uL
Inside Flow Rate	The speed at which the Inside Volume moves out of the probe and into the inside rinse position in the rinse station. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	10 mL/min
Outside Volume	The quantity of liquid used to rinse the outside of the probe.	500 uL

Add - Advanced/Rinsing Table *(Page 2 of 3)*

Add - Advanced/Rinsing (Continued)

Property Name	*Brief Description*	*Default Value*
Outside Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	10 mL/min
Inside Rinse Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the tube bottom for rinsing the probe at the inside rinse position in the rinse station.	0 mm
Outside Rinse Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the tube bottom for rinsing the probe at the outside rinse position in the rinse station.	0 mm

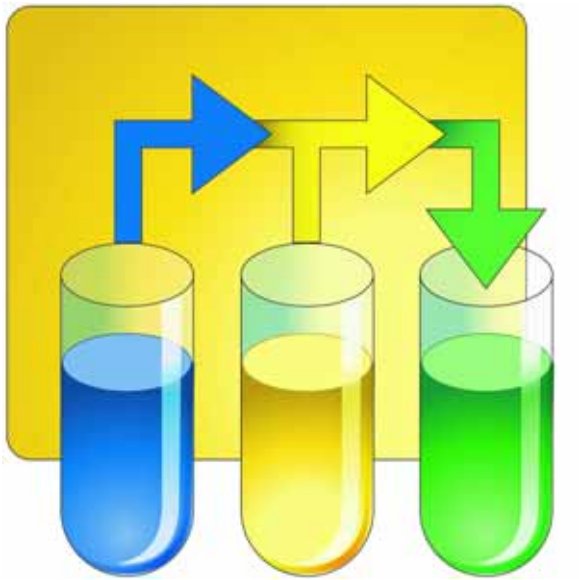
Add - Advanced/Rinsing Table *(Page 3 of 3)*

Add - Instruments

Property Name	*Brief Description*	*Default Value*
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump or VPS that the task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	

Add - Instruments

Add - Sequence of Steps



The following is an overview for the sequence of steps.

1 **Aspirate** on page A-12
2 **Dispense** on page A-14
3 **Inside Rinse** on page A-14
4 **Outside Rinse** on page A-15

ASPIRATE

Reservoir

1 Move Z to Z Safe Height
2 Aspirate Source Volume (from Reservoir) at Source Flow Rate
3 Move probe to Solution Well in Solution Zone
4 Aspirate Solution Air Gap at Air Gap Flow Rate
5 Lower probe into well to Solution Height
6 Aspirate Solution Volume at Solution Flow Rate using Liquid Level Following, if selected
7 Move Z to Z Safe Height

Tray

1 Move Z to Z Safe Height
2 Move probe to Source Well in Source Zone
3 Aspirate Source Air Gap at Air Gap Flow Rate
4 Lower probe into well to Source Height

5 Aspirate Source Volume + Extra Volume at Source Flow Rate using Liquid Level Following, if selected
6 Move Z to Z Safe Height
7 Move probe to Solution Well in Solution Zone
8 Aspirate Solution Air Gap at Air Gap Flow Rate
9 Lower probe into well to Solution Height
10 Aspirate Solution Volume at Solution Flow Rate using Liquid Level Following, if selected
11 Move Z to Z Safe Height

Transfer Port

1 Move Z to Z Safe Height
2 Move probe to well in Source Zone
3 Aspirate Source Air Gap at Air Gap Flow Rate
4 Lower probe into well to Source Height
5 Set Transfer Port On
6 Aspirate Source Volume + Extra Volume at Source Flow Rate
7 Set Transfer Port Off
8 Move Z to Z Safe Height
9 Move probe to Solution Well in Solution Zone
10 Aspirate Solution Air Gap at Air Gap Flow Rate
11 Lower probe into well to Solution Height

12 Aspirate Solution Volume at Solution Flow Rate using Liquid Level Following, if selected

13 Move Z to Z Safe Height

DISPENSE

1 Move probe to Result Well in Result Zone

2 Lower probe into well to Result Height

3 Dispense Solution Volume + Solution Air Gap + Source Volume at Result Flow Rate using Liquid Level Following, if selected.

4 Wait Equilibration Time

5 Perform a Touch Off (X direction), if selected and move Z to Z Safe Height

6 Move probe to well in Inside Rinse Zone

7 Lower probe into well to Inside Rinse Height

8 Dispense Extra Volume + Source Air Gap Volume at Result Flow Rate

9 Move Z to Z Safe Height

INSIDE RINSE

1 Move Z to Z Safe Height

2 Move probe to well in Inside Rinse Zone

3 Lower probe into well to Inside Rinse Height

4 Aspirate Inside Volume (from Reservoir) at Inside Rinse Flow Rate

5 Dispense Inside Volume at Inside Rinse Flow Rate

6 Repeat steps 4–5 until Inside Volume delivered
7 Move Z to Z Safe Height

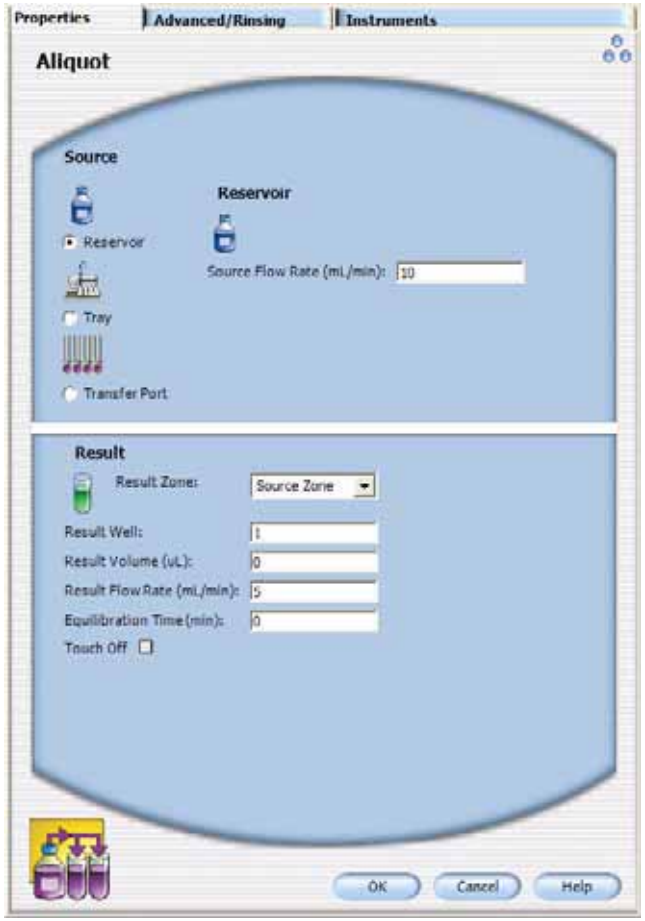
OUTSIDE RINSE

1 Move Z to Z Safe Height
2 Move probe into well in Outside Rinse Zone
3 Lower probe into well to Outside Rinse Height
4 Aspirate Outside Rinse Volume (from Reservoir) at Outside Rinse Flow Rate
5 Dispense Outside Rinse Volume at Outside Rinse Flow Rate.
6 Repeat steps 4–5 until Outside Rinse Volume delivered
7 Move Z to Z Safe Height

Aliquot

This task aspirates the liquid (source) from the reservoir, tray, or transfer ports and then dispenses that liquid equally to each of the wells of the result zone.

This task should be used in Batch mode only.



For more information about the properties on each tab, see:

Aliquot - Properties on page A-17

Aliquot - Advanced/Rinsing on page A-19

Aliquot - Instruments on page A-21

Aliquot - Sequence of Steps on page A-22

Aliquot - Properties

Property Name	*Brief Description*	*Default Value*
Source	Select Reservoir, Tray, or Transfer Port.	Reservoir
Reservoir Source Flow Rate	The speed at which the Result Volume moves into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	10 mL/min
Tray Source Zone	The zone from which the Result Volume is drawn.	
Tray Source Well	The well in the Source Zone from which the Result Volume is drawn. When using a multiple-probe instrument, type #x where x is a value defined in the Sample List.	1
Tray Extra Volume	An additional volume to the Result Volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/reservoir solvent and the Result Volume.	0 uL
Tray Source Air Gap	The quantity of the air gap aspirated before the Result Volume.	20 uL
Tray Source Flow Rate	The speed at which the Result Volume and Extra Volume move into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	5 mL/min
Tray Air Gap Flow Rate	The speed at which the Source Air Gap moves into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	0.3 mL/min

Aliquot - Properties Table *(Page 1 of 3)*

Aliquot - Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Transfer Port Source Zone	The zone from which the Result Volume is drawn.	
Transfer Port Transfer Port	Select a Transfer Port to activate for the task.	A
Transfer Port Extra Volume	An additional volume to the Result Volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/reservoir solvent and the Result Volume.	0 uL
Transfer Port Source Air Gap	The quantity of the air gap aspirated before the Result Volume.	20 uL
Transfer Port Source Flow Rate	The speed at which the Result Volume and Extra Volume move into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	5 mL/min
Transfer Port Air Gap Flow Rate	The speed at which the Source Air Gap moves into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	0.3 mL/min
Result Zone	The zone to which the Result Volume is delivered.	
Result Well	The well in the Result Zone to which the Result Volume is delivered. When using a multiple-probe instrument, type #x where x is a value defined in the Sample List.	1
Result Volume	The quantity of liquid delivered to the Result Well in the Result Zone.	0 uL

Aliquot - Properties Table *(Page 2 of 3)*

Aliquot - Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Result Flow Rate	The speed at which the Result Volume moves out of the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	5 mL/min
Equilibration Time	Time the program waits after each dispense before moving out of the well.	0 min
Touch Off	Select Touch Off to move to the edge of the well after dispensing (in the X direction).	

Aliquot - Properties Table *(Page 3 of 3)*

Aliquot - Advanced/Rinsing

Property Name	*Brief Description*	*Default Value*
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated and up while it is dispensed. This selection changes the reference point for the Source Height and Result Height to the liquid surface. Initial Volumes should be set in the Sample List when using this option.	
Liquid Level Detection	When selected, the probe will stop when the instrument detects the liquid surface. This selection changes the reference point for the Source Height and Result Height to the height at which the liquid was detected. **Note:** If no liquid is detected, the probe will go to the bottom of the tube. This option can only be used on instruments that support Liquid Level Detection.	

Aliquot - Advanced/Rinsing Table *(Page 1 of 3)*

Aliquot - Advanced/Rinsing (Continued)

Property Name	*Brief Description*	*Default Value*
Sensitivity	Sensitivity is used to detect liquid when Liquid Level Detection is used. A low setting is the most sensitive and higher settings are less sensitive. Range is dependent on the instrument; consult the instrument's user's guide.	1
Source Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from a defined reference point (Tube Bottom unless Liquid Level Detection or Liquid Level Following is selected) when aspirating the Result Volume.	2 mm
Result Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the defined reference point (Tube Bottom unless Liquid Level Detection or Liquid Level Following is selected) when delivering to the Result Zone.	2 mm
Inside Rinse Zone	The zone to which the Inside Volume is delivered.	Inside Rinse
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
Inside Volume	The quantity of liquid used to rinse the inside of the probe.	250 uL
Inside Flow Rate	The speed at which the Inside Volume moves out of the probe and into the inside rinse position in the rinse station. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	10 mL/min
Outside Volume	The quantity of liquid used to rinse the outside of the probe.	500 uL

Aliquot - Advanced/Rinsing Table *(Page 2 of 3)*

Aliquot - Advanced/Rinsing (Continued)

Property Name	*Brief Description*	*Default Value*
Outside Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	10 mL/min
Inside Rinse Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the tube bottom for rinsing the probe at the inside rinse position in the rinse station.	0 mm
Outside Rinse Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the tube bottom for rinsing the probe at the outside rinse position in the rinse station.	0 mm

Aliquot - Advanced/Rinsing Table *(Page 3 of 3)*

Aliquot - Instruments

Property Name	*Brief Description*	*Default Value*
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump or VPS that the task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	

Aliquot - Instruments

Aliquot - Sequence of Steps

The following is an overview for the sequence of steps.

1 **Aspirate** on page A-22
2 **Dispense** on page A-23
3 **Inside Rinse** on page A-24
4 **Outside Rinse** on page A-24

ASPIRATE

Reservoir

1 Move Z to Z Safe Height
2 Aspirate aliquot volume (Result Volume x number of Result Wells) at Source Flow Rate
   - If aliquot volume is greater than the syringe capacity, aspirate the maximum syringe volume

Tray

1 Move Z to Z Safe Height
2 Aspirate Source Air Gap at Air Gap Flow Rate
3 Move probe to Source Well in Source Zone
4 Lower probe into well to Source Height
5 Aspirate aliquot volume (Result Volume x number of dispenses + Extra Volume) at Source Flow Rate using Liquid Level Following, if selected
   - If volume is greater than syringe capacity, aspirate syringe capacity
6 Move Z to Z Safe Height

Transfer Port

1 Move Z to Z Safe Height
2 Aspirate Source Air Gap at Air Gap Flow Rate
3 Move probe to well in Source Zone
4 Lower probe into well to Source Height
5 Set Transfer Port to On
6 Aspirate aliquot volume (Result Volume x number of dispenses) + Extra Volume at Source Flow Rate
   - If volume is greater than syringe capacity, aspirate syringe capacity
7 Set Transfer Port to Off
8 Move Z to Z Safe Height

DISPENSE

1 Move probe to Result Well in Result Zone
2 Lower probe into well to Result Height
3 Dispense Result Volume at Result Flow Rate using Liquid Level Following, if selected
4 Wait Equilibration Time
5 Perform a Touch Off (X direction), if selected and move Z to Z Safe Height
6 Repeat steps 1–5 of Dispense for subsequent Result Wells. If source from Tray or Transfer Port, return to Source Zone to aspirate more source, if necessary. If source from Reservoir, aspirate more source from Reservoir, if necessary.
7 Move probe to well in Inside Rinse Zone
8 Lower probe into well to Inside Rinse Height

9 Dispense Extra Volume + Source Air Gap at Result Flow Rate

10 Move Z to Z Safe Height

INSIDE RINSE

1 Move Z to Z Safe Height

2 Move probe to well in Inside Rinse Zone

3 Lower probe into well to Inside Rinse Height

4 Aspirate Inside Volume (from Reservoir) at Inside Rinse Flow Rate

5 Dispense Inside Volume at Inside Rinse Flow Rate

6 Repeat steps 4–5 until Inside Volume is delivered

7 Move Z to Z Safe Height

OUTSIDE RINSE

1 Move Z to Z Safe Height

2 Move probe into well in Outside Rinse Zone

3 Lower probe into well to Outside Rinse Height

4 Aspirate Outside Rinse Volume (from Reservoir) at Outside Rinse Flow Rate

5 Dispense Outside Rinse Volume at Outside Rinse Flow Rate.

6 Repeat steps 4–5 until Outside Rinse Volume is delivered

7 Move Z to Z Safe Height

Cherry Pick

This task transfers liquid (source) from wells in the source zone to a sequence of wells (beginning with the starting well) in the result zone.

For more information about the properties on each tab, see:

Cherry Pick - Properties on page A-26

Cherry Pick - Advanced/Rinsing on page A-27

Cherry Pick - Instruments on page A-29

Cherry Pick - Sequence of Steps on page A-30

Cherry Pick - Properties

Property Name	*Brief Description*	*Default Value*
Source Zone	The zone from which the Source Volume is drawn.	
Source Well	The well in the Source Zone from which the Source Volume is drawn. When using a multiple-probe instrument, type #x where x is a value defined in the Sample List.	1
Source Volume	The quantity of a sample.	0 uL
Extra Volume	An additional volume to the Source Volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/reservoir solvent and the Source Volume.	0 uL
Source Air Gap	The quantity of the air gap aspirated before the Source Volume.	20 uL
Source Flow Rate	The speed at which the Source Volume and Extra Volume move into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	5 mL/min
Air Gap Flow Rate	The speed at which the Source Air Gap moves into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	0.3 mL/min
Result Zone	The zone to which the Source Volume is delivered.	
Starting Well	The well in the Result Zone to which to start dispensing the source volume. When using a multiple-probe instrument, type #x where x is a value defined in the Sample List.	1
Result Flow Rate	The speed at which the Source Volume moves out of the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	5 mL/min

Cherry Pick - Properties Table *(Page 1 of 2)*

Cherry Pick - Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Equilibration Time	Time the program waits after each dispense before moving out of the well.	0 min
Touch Off	Select Touch Off to move to the edge of the well after dispensing (in the X direction).	

Cherry Pick - Properties Table *(Page 2 of 2)*

Cherry Pick - Advanced/Rinsing

Property Name	*Brief Description*	*Default Value*
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated and up while it is dispensed. This selection changes the reference point for the Source Height and Result Height to the liquid surface. Initial Volumes should be set in the Sample List when using this option.	
Liquid Level Detection	When selected, the probe will stop when the instrument detects the liquid surface. This selection changes the reference point for the Source Height and Result Height to the height at which the liquid was detected. **Note:** If no liquid is detected, the probe will go to the bottom of the tube. This option can only be used on instruments that support Liquid Level Detection.	
Sensitivity	Sensitivity is used to detect liquid when Liquid Level Detection is used. A low setting is the most sensitive and higher settings are less sensitive. Range is dependent on the instrument; consult the instrument's user's guide.	1

Cherry Pick - Advanced/Rinsing Table *(Page 1 of 3)*

Cherry Pick - Advanced/Rinsing (Continued)

Property Name	*Brief Description*	*Default Value*
Source Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from a defined reference point (Tube Bottom unless Liquid Level Detection or Liquid Level Following is selected) when aspirating the Source Volume.	2 mm
Result Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the defined reference point (Tube Bottom unless Liquid Level Detection or Liquid Level Following is selected) when delivering to the Result Zone.	2 mm
Inside Rinse Zone	The zone to which the Inside Volume is delivered.	Inside Rinse
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
Inside Volume	The quantity of liquid used to rinse the inside of the probe.	250 uL
Inside Flow Rate	The speed at which the Inside Volume moves out of the probe and into the inside rinse position in the rinse station. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	10 mL/min
Outside Volume	The quantity of liquid used to rinse the outside of the probe.	500 uL
Outside Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	10 mL/min

Cherry Pick - Advanced/Rinsing Table *(Page 2 of 3)*

Cherry Pick - Advanced/Rinsing (Continued)

Property Name	*Brief Description*	*Default Value*
Inside Rinse Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the tube bottom for rinsing the probe at the inside rinse position in the rinse station.	0 mm
Outside Rinse Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the tube bottom for rinsing the probe at the outside rinse position in the rinse station.	0 mm

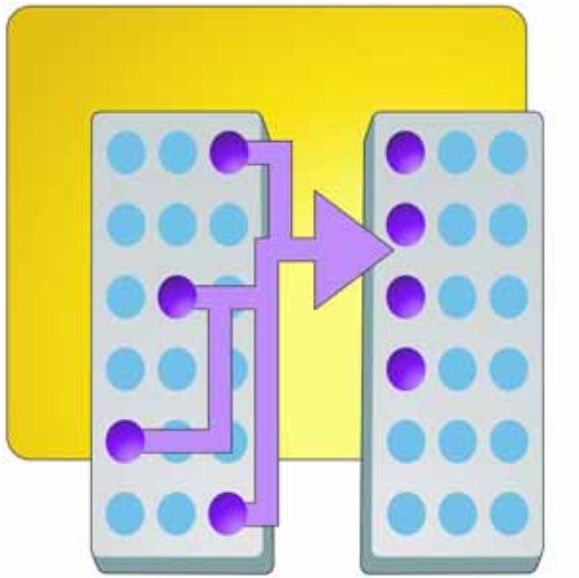
Cherry Pick - Advanced/Rinsing Table ***(Page 3 of 3)***

Cherry Pick - Instruments

Property Name	*Brief Description*	*Default Value*
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump or VPS that the task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	

Cherry Pick - Instruments

Cherry Pick - Sequence of Steps



The following is an overview for the sequence of steps.

1 **Aspirate** on page A-30
2 **Dispense** on page A-30
3 **Inside Rinse** on page A-31
4 **Outside Rinse** on page A-31

ASPIRATE

1 Move Z to Z Safe Height
2 Aspirate Source Air Gap at Air Gap Flow Rate
3 Move probe to Source Well in Source Zone
4 Lower probe into well to Source Height
5 Aspirate Source Volume + Extra Volume at Source Flow Rate using Liquid Level Following, if selected
6 Move Z to Z Safe Height

DISPENSE

1 Move probe to Starting Well in Result Zone

   Note: Well is automatically incremented for subsequent Result Wells when a variable is used for Result Well
2 Lower probe into well to Result Height
3 Dispense Source Volume at Result Flow Rate using Liquid Level Following, if selected
4 Wait Equilibration Time
5 Perform a Touch Off (X direction), if selected and move Z to Z Safe Height

6 If Source Volume is greater than syringe capacity, repeat Aspirate (Air Gap and Extra Volume are not aspirated) and Dispense until Source Volume is delivered

7 Move probe to well in Inside Rinse Zone

8 Lower probe into well to Inside Rinse Height

9 Dispense Extra Volume + Source Air Gap at Result Flow Rate

INSIDE RINSE

1 Move Z to Z Safe Height

2 Move probe to well in Inside Rinse Zone

3 Lower probe into well to Inside Rinse Height

4 Aspirate Inside Volume (from Reservoir) at Inside Rinse Flow Rate

5 Dispense Inside Volume at Inside Rinse Flow Rate

6 Repeat steps 4–5 until Inside Volume delivered

7 Move Z to Z Safe Height

OUTSIDE RINSE

1 Move Z to Z Safe Height

2 Move probe into well in Outside Rinse Zone

3 Lower probe into well to Outside Rinse Height

4 Aspirate Outside Rinse Volume (from Reservoir) at Outside Rinse Flow Rate

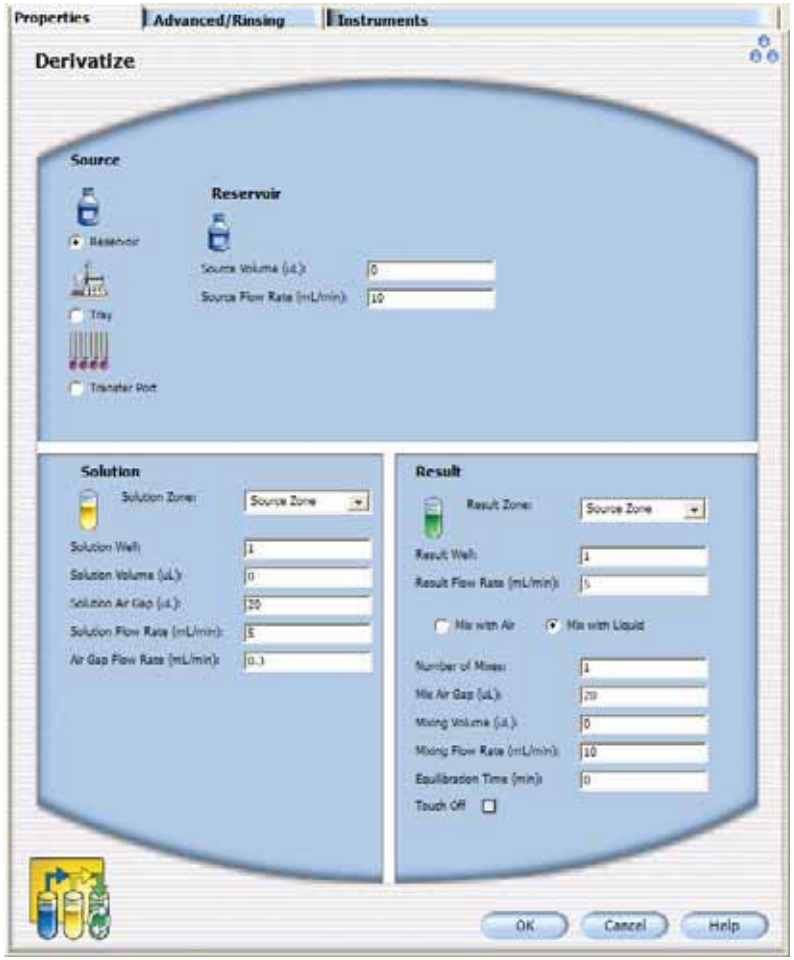
5 Dispense Outside Rinse Volume at Outside Rinse Flow Rate.

6 Repeat steps 4–5 until Outside Rinse Volume delivered

7 Move Z to Z Safe Height

Derivatize

This task performs an add (aspirates the specified volume of liquid (source) from the reservoir, tray, or transfer ports and another liquid (solution) from the tray and then dispenses the combined volume to the wells of the result zone) and then mixes with liquid or air.



For more information about the properties on each tab, see:

Derivatize - Properties on page A-33

Derivatize - Advanced/Rinsing on page A-37

Derivatize - Instruments on page A-39

Derivatize - Sequence of Steps on page A-40

Derivatize - Properties

Property Name	*Brief Description*	*Default Value*
Source	Select Reservoir, Tray, or Transfer Port.	Reservoir
Reservoir Source Volume	The quantity of a sample.	0 uL
Reservoir Source Flow Rate	The speed at which the Source Volume moves into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	10 mL/min
Tray Source Zone	The zone from which the Source Volume is drawn.	
Tray Source Well	The well in the Source Zone from which the Source Volume is drawn. When using a multiple-probe instrument, type #x where x is a value defined in the Sample List.	1
Tray Source Volume	The quantity of a sample.	0 uL
Tray Extra Volume	An additional volume to the Source Volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/reservoir solvent and the Source Volume.	0 uL
Tray Source Air Gap	The quantity of the air gap aspirated before the Source Volume.	20 uL

Derivatize - Properties Table *(Page 1 of 4)*

Derivatize - Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Tray Source Flow Rate	The speed at which the Source Volume and Extra Volume move into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	5 mL/min
Tray Air Gap Flow Rate	The speed at which the Source Air Gap moves into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	0.3 mL/min
Transfer Port Source Zone	The zone from which the Source Volume is drawn.	
Transfer Port Transfer Port	Select a Transfer Port to activate for the task.	A
Transfer Port Source Volume	The quantity of a sample.	0 uL
Transfer Port Extra Volume	An additional volume to the Source Volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/reservoir solvent and the Source Volume.	0 uL
Transfer Port Source Air Gap	The quantity of the air gap aspirated before the Source Volume.	20 uL
Transfer Port Source Flow Rate	The speed at which the Source Volume and Extra Volume move into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	5 mL/min

Derivatize - Properties Table *(Page 2 of 4)*

Derivatize - Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Transfer Port Air Gap Flow Rate	The speed at which the Source Air Gap moves into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	0.3 mL/min
Solution Zone	The zone from which the Solution Volume is drawn.	
Solution Well	The well in the Solution Zone from which the Solution Volume is drawn. When using a multiple-probe instrument, type #x where x is a value defined in the Sample List.	1
Solution Volume	The quantity of solution.	0 uL
Solution Air Gap	The quantity of the air gap aspirated before the Solution Volume.	20 uL
Solution Flow Rate	The speed at which the Solution Volume moves into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	5 mL/min
Air Gap Flow Rate	The speed at which the Solution Air Gap moves into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	0.3 mL/min
Result Zone	The zone to which the Source and Solution Volumes are delivered.	
Result Well	The well in the Result Zone to which the Source and Solution Volumes are delivered. When using a multiple-probe instrument, type #x where x is a value defined in the Sample List.	1
Result Flow Rate	The speed at which the Source and Solution Volumes are move out of the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	5 mL/min

Derivatize - Properties Table *(Page 3 of 4)*

Derivatize - Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Mix with Air	Select box to mix with air.	
Mix with Liquid	Select box to mix with liquid.	
Number of Mixes	Number of times the task should repeat the commands related to mixing.	1
Mix Air Gap	The quantity of the air gap aspirated before the Mixing Volume.	20 uL
Mixing Volume	The quantity of air or liquid used as part of a mixing process.	0 uL
Mixing Flow Rate	The speed at which a volume of air or liquid moves into a probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	10 mL/min
Equilibration Time	Time the program waits after each dispense before moving out of the well.	0 min
Touch Off	Select Touch Off to move to the edge of the well after dispensing (in the X direction).	

Derivatize - Properties Table *(Page 4 of 4)*

Derivatize - Advanced/Rinsing

Property Name	*Brief Description*	*Default Value*
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated and up while it is dispensed. This selection changes the reference point for the Source Height, Solution Height, and Result Height to the liquid surface. Initial Volumes should be set in the Sample List when using this option.	
Liquid Level Detection	When selected, the probe will stop when the instrument detects the liquid surface. This selection changes the reference point for the Source Height, Solution Height, and Result Height to the height at which the liquid was detected. **Note:** If no liquid is detected, the probe will go to the bottom of the tube. This option can only be used on instruments that support Liquid Level Detection.	
Sensitivity	Sensitivity is used to detect liquid when Liquid Level Detection is used. A low setting is the most sensitive and higher settings are less sensitive. Range is dependent on the instrument; consult the instrument's user's guide.	1
Source Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from a defined reference point (Tube Bottom unless Liquid Level Detection or Liquid Level Following is selected) when aspirating the Source Volume.	2 mm
Solution Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from a defined reference point (Tube Bottom unless Liquid Level Detection or Liquid Level Following is selected) when aspirating the Solution Volume.	2 mm

Derivatize - Advanced/Rinsing Table *(Page 1 of 3)*

Derivatize - Advanced/Rinsing (Continued)

Property Name	*Brief Description*	*Default Value*
Result Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the defined reference point (Tube Bottom unless Liquid Level Detection or Liquid Level Following is selected) when delivering to the Result Zone and mixing.	2 mm
Inside Rinse Zone	The zone to which the Inside Volume is delivered.	Inside Rinse
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
Inside Volume	The quantity of liquid used to rinse the inside of the probe.	250 uL
Inside Flow Rate	The speed at which the Inside Volume moves out of the probe and into the inside rinse position in the rinse station. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	10 mL/min
Outside Volume	The quantity of liquid used to rinse the outside of the probe.	500 uL
Outside Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	10 mL/min

Derivatize - Advanced/Rinsing Table *(Page 2 of 3)*

Derivatize - Advanced/Rinsing (Continued)

Property Name	*Brief Description*	*Default Value*
Inside Rinse Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the tube bottom for rinsing the probe at the inside rinse position in the rinse station.	0 mm
Outside Rinse Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the tube bottom for rinsing the probe at the outside rinse position in the rinse station.	0 mm

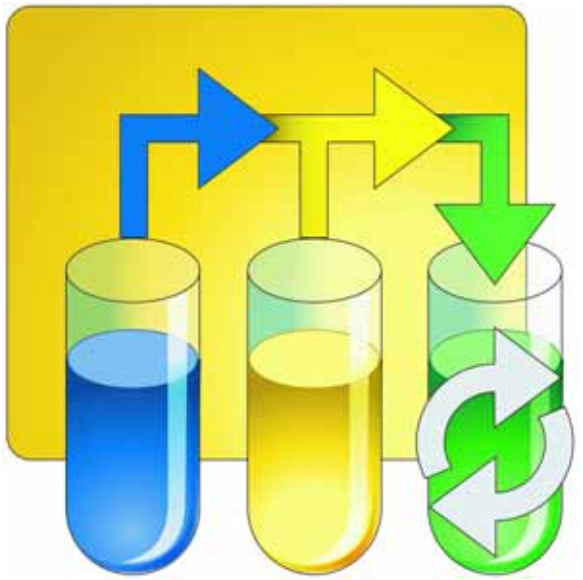
Derivatize - Advanced/Rinsing Table ***(Page 3 of 3)***

Derivatize - Instruments

Property Name	*Brief Description*	*Default Value*
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump or VPS that the task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	

Derivatize - Instruments

Derivatize - Sequence of Steps



The following is an overview for the sequence of steps.

1 **Aspirate** on page A-40
2 **Dispense** on page A-42
3 **Mix with Liquid** on page A-42
4 **Mix with Air** on page A-43
5 **Inside Rinse** on page A-43
6 **Outside Rinse** on page A-44

ASPIRATE

Reservoir

1 Move Z to Z Safe Height
2 Aspirate Source Volume (from Reservoir) at Source Flow Rate
3 Move probe to Solution Well in Solution Zone
4 Aspirate Solution Air Gap at Air Gap Flow Rate
5 Lower probe into well to Solution Height
6 Aspirate Solution Volume at Solution Flow Rate using Liquid Level Following, if selected
7 Move Z to Z Safe Height

Tray

1 Move Z to Z Safe Height
2 Move probe to Source Well in Source Zone

3 Aspirate Source Air Gap at Air Gap Flow Rate
4 Lower probe into well to Source Height
5 Aspirate Source Volume + Extra Volume at Source Flow Rate using Liquid Level Following, if selected
6 Move Z to Z Safe Height
7 Move probe to Solution Well in Solution Zone
8 Aspirate Solution Air Gap at Air Gap Flow Rate
9 Lower probe into well to Solution Height
10 Aspirate Solution Volume at Solution Flow Rate using Liquid Level Following, if selected
11 Move Z to Z Safe Height

Transfer Port

1 Move Z to Z Safe Height
2 Move probe to well in Source Zone
3 Aspirate Source Air Gap at Air Gap Flow Rate
4 Lower probe into well to Source Height
5 Set Transfer Port On
6 Aspirate Source Volume + Extra Volume at Source Flow Rate
7 Set Transfer Port Off
8 Move Z to Z Safe Height
9 Move probe to Solution Well in Solution Zone
10 Aspirate Solution Air Gap at Air Gap Flow Rate
11 Lower probe into well to Solution Height

12 Aspirate Solution Volume at Solution Flow Rate using Liquid Level Following, if selected

13 Move Z to Z Safe Height

DISPENSE

1 Move probe to Result Well in Result Zone

2 Lower probe into well to Result Height

3 Dispense Solution Volume + Solution Air Gap + Source Volume at Result Flow Rate using Liquid Level Following, if selected

4 Wait Equilibration Time

5 Move Z to Z Safe Height, performing a Touch off (X direction) if selected

6 Move probe to well in Inside Rinse Zone

7 Lower probe into well to Inside Rinse Height

8 Dispense Extra Volume + Source Air Gap at Result Flow Rate

MIX WITH LIQUID

1 Aspirate

a) Move Z to Z Z Safe Height

b) Move probe to Result Well in Result Zone (same as in Dispense)

c) Aspirate Mix Air Gap at Mixing Flow Rate

d) Lower probe into well to Result Height

e) Aspirate Mixing Volume at Mixing Flow Rate using Liquid Level Following, if selected

f) Lower probe into well to Result Height

g) Dispense Mixing Volume at Mixing Flow Rate using Liquid Level Following, if selected

h) Wait Equilibration Time

i) Repeat steps d–h until Number of Mixes complete
j) Perform a Touch Off (X direction), if selected and move Z to Z Safe Height

2 Drain
a) Move probe to well in Inside Rinse Zone
b) Lower probe into well to Inside Rinse Height
c) Dispense Mix Air Gap at Mixing Flow Rate
d) Move Z to Z Safe Height

MIX WITH AIR

1 Aspirate
a) Move Z to Z Safe Height
b) Move probe to Result Well in Result Zone (same as in Dispense)
c) Aspirate Mix Air Gap at Mixing Flow Rate
d) Move Z to Z Safe Height
e) Aspirate Mixing Volume at Mixing Flow Rate
f) Lower probe into well to Result Height
g) Dispense Mixing Volume at Mixing Flow Rate
h) Wait Equilibration Time
i) Repeat steps d–h until Number of Mixes complete
j) Perform a Touch Off (X direction), if selected and move Z to Z Safe Height

INSIDE RINSE

1 Move Z to Z Safe Height
2 Move probe to well in Inside Rinse Zone

3 Lower probe into well to Inside Rinse Height
4 Aspirate Inside Volume (from Reservoir) at Inside Rinse Flow Rate
5 Dispense Inside Volume at Inside Rinse Flow Rate
6 Repeat steps 4–5 until Inside Volume delivered
7 Move Z to Z Safe Height

OUTSIDE RINSE

1 Move Z to Z Safe Height
2 Move probe into well in Outside Rinse Zone
3 Lower probe into well to Outside Rinse Height
4 Aspirate Outside Rinse Volume (from Reservoir) at Outside Rinse Flow Rate
5 Dispense Outside Rinse Volume at Outside Rinse Flow Rate.
6 Repeat steps 4–5 until Outside Rinse Volume delivered
7 Move Z to Z Safe Height

Dilute

This task aspirates the specified volume of liquid (source) from the tray and another liquid (diluent) from the reservoir, tray, or transfer ports and then dispenses the combined volume to the wells of the result zone.

For more information about the properties on each tab, see:

Dilute - Properties on page A-46

Dilute - Advanced/Rinsing on page A-49

Dilute - Instruments on page A-51

Dilute - Sequence of Steps on page A-52

Dilute - Properties

Property Name	*Brief Description*	*Default Value*
Source Zone	The zone from which the Source Volume is drawn.	
Source Well	The well in the Source Zone from which the Source Volume is drawn. When using a multiple-probe instrument, type #x where x is a value defined in the Sample List.	1
Source Volume	The quantity of a sample.	0 uL
Extra Volume	An additional volume to the Source Volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/reservoir solvent and the Source Volume.	0 uL
Source Air Gap	The quantity of the air gap aspirated before the Source Volume.	20 uL
Source Flow Rate	The speed at which the Source Volume and Extra Volume move into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	5 mL/min
Air Gap Flow Rate	The speed at which the Source Air Gap moves into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	0.3 mL/min
Diluent	Select Reservoir, Tray, or Transfer Port.	Tray
Tray Diluent Zone	The zone from which the Diluent Volume is drawn.	
Tray Diluent Well	The well in the Diluent Zone from which the Diluent Volume is drawn. When using a multiple-probe instrument, type #x where x is a value defined in the Sample List.	1
Tray Diluent Volume	The quantity of liquid used to dilute the Source Volume.	0 uL

Dilute - Properties Table *(Page 1 of 3)*

Dilute - Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Tray Diluent Air Gap	The quantity of the air gap aspirated before the Diluent Volume.	20 uL
Tray Diluent Flow Rate	The speed at which the Diluent Volume moves into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	5 mL/min
Tray Air Gap Flow Rate	The speed at which the Diluent Air Gap Volume moves into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	0.3 mL/min
Reservoir Diluent Volume	The quantity of liquid used to dilute the Source Volume.	0
Reservoir Diluent Flow Rate	The speed at which the Diluent Volume moves into of the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	10 mL/min
Transfer Port Diluent Zone	The zone from which the Diluent Volume is drawn.	
Transfer Port Transfer Port	Select a Transfer Port to activate for the task.	A
Transfer Port Diluent Volume	The quantity of liquid used to dilute the Source Volume.	0 uL

Dilute - Properties Table *(Page 2 of 3)*

Dilute - Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Transfer Port Diluent Air Gap	The quantity of the air gap aspirated before the Diluent Volume.	20 uL
Transfer Port Diluent Flow Rate	The speed at which the Diluent Volume moves into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	5 mL/min
Transfer Port Air Gap Flow Rate	The speed at which the Diluent Air Gap moves into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	0.3 mL/min
Result Zone	The zone to which the Source and Diluent Volumes are delivered.	
Result Well	The well in the Result Zone to which the Source and Diluent Volumes are delivered. When using a multiple-probe instrument, type #x where x is a value defined in the Sample List.	1
Result Flow Rate	The speed at which the Source and Diluent Volumes move out of the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	5 mL/min
Equilibration Time	Time the program waits after each dispense before moving out of the well.	0 min
Touch Off	Select Touch Off to move to the edge of the well after dispensing (in the X direction).	

Dilute - Properties Table *(Page 3 of 3)*

Dilute - Advanced/Rinsing

Property Name	*Brief Description*	*Default Value*
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated and up while it is dispensed. This selection changes the reference point for the Source Height, Diluent Height, and Result Height to the liquid surface. Initial Volumes should be set in the Sample List when using this option.	
Liquid Level Detection	When selected, the probe will stop when the instrument detects the liquid surface. This selection changes the reference point for the Source Height, Diluent Height, and Result Height to the height at which the liquid was detected. **Note:** If no liquid is detected, the probe will go to the bottom of the tube. This option can only be used on instruments that support Liquid Level Detection.	
Sensitivity	Sensitivity is used to detect liquid when Liquid Level Detection is used. A low setting is the most sensitive and higher settings are less sensitive. Range is dependent on the instrument; consult the instrument's user's guide.	1
Source Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from a defined reference point (Tube Bottom unless Liquid Level Detection or Liquid Level Following is selected) when aspirating the Source Volume.	2 mm
Diluent Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the defined reference point (Tube Bottom unless Liquid Level Detection or Liquid Level Following is selected) when aspirating the Diluent Volume.	2 mm

Dilute - Advanced/Rinsing Table *(Page 1 of 3)*

Dilute - Advanced/Rinsing (Continued)

Property Name	*Brief Description*	*Default Value*
Result Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the defined reference point (Tube Bottom unless Liquid Level Detection or Liquid Level Following is selected) when delivering to the Result Zone.	2 mm
Inside Rinse Zone	The zone to which the Inside Volume is delivered.	Inside Rinse
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
Inside Volume	The quantity of liquid used to rinse the inside of the probe.	250 uL
Inside Flow Rate	The speed at which the Inside Volume moves out of the probe and into the inside rinse position in the rinse station. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	10 mL/min
Outside Volume	The quantity of liquid used to rinse the outside of the probe.	500 uL
Outside Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	10 mL/min

Dilute - Advanced/Rinsing Table *(Page 2 of 3)*

Dilute - Advanced/Rinsing (Continued)

Property Name	*Brief Description*	*Default Value*
Inside Rinse Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the tube bottom for rinsing the probe at the inside rinse position in the rinse station.	0 mm
Outside Rinse Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the tube bottom for rinsing the probe at the outside rinse position in the rinse station.	0 mm

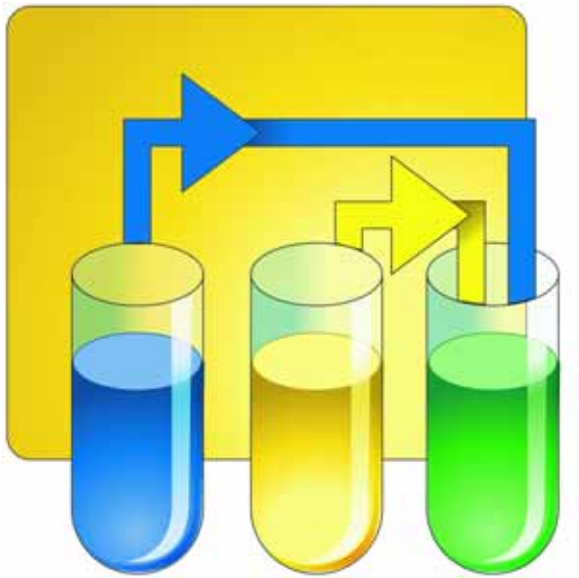
Dilute - Advanced/Rinsing Table *(Page 3 of 3)*

Dilute - Instruments

Property Name	*Brief Description*	*Default Value*
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump or VPS that the task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	

Dilute - Instruments

Dilute - Sequence of Steps



The following is an overview for the sequence of steps.

1 **Aspirate** on page A-52
2 **Dispense** on page A-54
3 **Inside Rinse** on page A-55
4 **Outside Rinse** on page A-55

ASPIRATE

Reservoir

1 Move Z to Z Safe Height
2 Aspirate Diluent Volume (from Reservoir) at Diluent Flow Rate
3 Move probe to Source Well in Source Zone
4 Aspirate Source Air Gap at Air Gap Flow Rate
5 Lower probe into well to Source Height
6 Aspirate Source Volume at Source Flow Rate using Liquid Level Following, if selected
7 Move Z to Z Safe Height

Tray

1 Move Z to Z Safe Height
2 Move probe to Source Well in Source Zone
3 Aspirate Source Air Gap at Air Gap Flow Rate
4 Lower probe into well to Source Height

5 Aspirate Source Volume + Extra Volume at Source Flow Rate using Liquid Level Following, if selected
6 Move Z to Z Safe Height
7 Move probe to Diluent Well in Diluent Zone
8 Aspirate Diluent Air Gap at Air Gap Flow Rate
9 Lower probe into well to Diluent Height
10 Aspirate Diluent Volume at Diluent Flow Rate using Liquid Level Following, if selected
11 Move Z to Z Safe Height

Transfer Port

1 Move Z to Z Safe Height
2 Move probe to Source Well in Source Zone
3 Aspirate Source Air Gap at Air Gap Flow Rate
4 Lower probe into well to Source Height
5 Aspirate Source Volume + Extra Volume at Source Flow Rate using Liquid Level Following, if selected
6 Move Z to Z Safe Height
7 Move probe into well in Diluent Zone
8 Aspirate Diluent Air Gap at Air Gap Flow Rate
9 Lower probe into well to Diluent Height
10 Set Transfer Port to On
11 Aspirate Diluent Volume at Diluent Flow Rate

12 Set Transfer Port to Off

13 Move Z to Z Safe Height

DISPENSE

Reservoir

1 Move probe to Result Well in Result Zone

2 Lower probe into well to Result Height

3 Dispense to Source Volume + Source Air Gap + Diluent Volume (from Reservoir) at Result Flow Rate using Liquid Level Following, if selected

4 Wait Equilibration Time

5 Perform a Touch Off (X direction), if selected and move Z to Z Safe Height

Tray or Transfer port

1 Move probe to Result Well in Result Zone

2 Lower probe into well to Result Height

3 Dispense Source Volume + Diluent Air Gap + Diluent Volume at Result Flow Rate using Liquid Level Following, if selected

4 Wait Equilibration Time

5 Perform a Touch Off (X direction), if selected and move Z to Z Safe Height

6 Move probe to well in Inside Rinse Zone

7 Lower probe into well to Inside Rinse Height
8 Dispense Extra Volume + Source Air Gap at Result Flow Rate

INSIDE RINSE

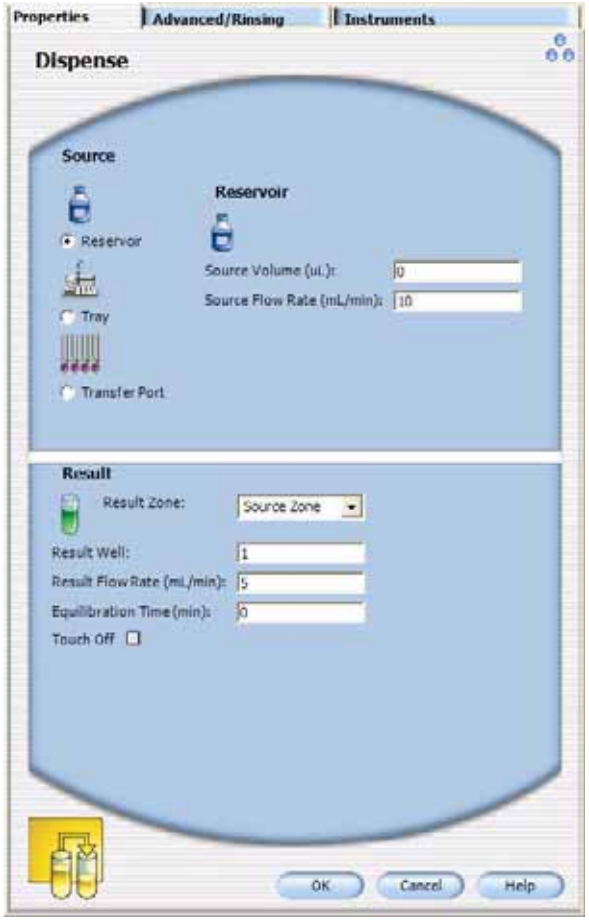
1 Move Z to Z Safe Height
2 Move probe to well in Inside Rinse Zone
3 Lower probe into well to Inside Rinse Height
4 Aspirate Inside Volume (from Reservoir) at Inside Rinse Flow Rate
5 Dispense Inside Volume at Inside Rinse Flow Rate
6 Repeat steps 4–5 until Inside Volume delivered
7 Move Z to Z Safe Height

OUTSIDE RINSE

1 Move Z to Z Safe Height
2 Move probe into well in Outside Rinse Zone
3 Lower probe into well to Outside Rinse Height
4 Aspirate Outside Rinse Volume (from Reservoir) at Outside Rinse Flow Rate
5 Dispense Outside Rinse Volume at Outside Rinse Flow Rate.
6 Repeat steps 4–5 until Outside Rinse Volume delivered
7 Move Z to Z Safe Height

Dispense

This task aspirates the specified volume of liquid (source) from the reservoir, tray, or transfer ports and then dispenses the volume to the wells of the result zone.



For more information about the properties on each tab, see:

Dispense - Properties on page A-57

Dispense - Advanced/Rinsing on page A-60

Dispense - Instruments on page A-62

Dispense - Sequence of Steps on page A-62

Dispense - Properties

Property Name	*Brief Description*	*Default Value*
Source	Select Reservoir, Tray, or Transfer Port.	Reservoir
Reservoir Source Volume	The quantity of a sample.	0 uL
Reservoir Source Flow Rate	The speed at which the Source Volume moves into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	10 mL/min
Tray Source Zone	The zone from which the Source Volume is drawn.	
Tray Source Well	The well in the Source Zone from which the Source Volume is drawn. When using a multiple-probe instrument, type #x where x is a value defined in the Sample List.	1
Tray Source Volume	The quantity of a sample.	0 uL
Tray Extra Volume	An additional volume to the Source Volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/reservoir solvent and the Source Volume.	0 uL
Tray Source Air Gap	The quantity of the air gap aspirated before the Source Volume.	20 uL

Dispense - Properties Table *(Page 1 of 3)*

Dispense - Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Tray Source Flow Rate	The speed at which the Source Volume and Extra Volume move into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	5 mL/min
Tray Air Gap Flow Rate	The speed at which the Source Air Gap moves into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	0.3 mL/min
Transfer Port Source Zone	The zone from which the Source Volume is drawn.	
Transfer Port Transfer Port	Select a Transfer Port to activate for the task.	A
Transfer Port Source Volume	The quantity of a sample.	0 uL
Transfer Port Extra Volume	An additional volume to the Source Volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/reservoir solvent and the Source Volume.	0 uL
Transfer Port Source Air Gap	The quantity of the air gap aspirated before the Source Volume.	20 uL
Transfer Port Source Flow Rate	The speed at which the Source Volume and Extra Volume move into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	5 mL/min

Dispense - Properties Table *(Page 2 of 3)*

Dispense - Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Transfer Port Air Gap Flow Rate	The speed at which the Source Air Gap moves into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	0.3 mL/min
Result Zone	The zone to which the Source Volume is delivered.	
Result Well	The well in the Result Zone to which the Source Volume is delivered. When using a multiple-probe instrument, type #x where x is a value defined in the Sample List.	1
Result Flow Rate	The speed at which the Source Volume moves out of the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	5 mL/min
Equilibration Time	Time the program waits after each dispense before moving out of the well.	0 min
Touch Off	Select Touch Off to move to the edge of the well after dispensing (in the X direction).	

Dispense - Properties Table *(Page 3 of 3)*

Dispense - Advanced/Rinsing

Property Name	*Brief Description*	*Default Value*
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated and up while it is dispensed. This selection changes the reference point for the Source Height and Result Height to the liquid surface. Initial Volumes should be set in the Sample List when using this option.	
Liquid Level Detection	When selected, the probe will stop when the instrument detects the liquid surface. This selection changes the reference point for the Source Height and Result Height to the height at which the liquid was detected. **Note:** If no liquid is detected, the probe will go to the bottom of the tube. This option can only be used on instruments that support Liquid Level Detection.	
Sensitivity	Sensitivity is used to detect liquid when Liquid Level Detection is used. A low setting is the most sensitive and higher settings are less sensitive. Range is dependent on the instrument; consult the instrument's user's guide.	1
Source Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from a defined reference point (Tube Bottom unless Liquid Level Detection or Liquid Level Following is selected) when aspirating the Source Volume.	2 mm
Result Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the defined reference point (Tube Bottom unless Liquid Level Detection or Liquid Level Following is selected) when delivering to the Result Zone.	2 mm

Dispense - Advanced/Rinsing Table *(Page 1 of 2)*

Dispense - Advanced/Rinsing (Continued)

Property Name	*Brief Description*	*Default Value*
Inside Rinse Zone	The zone to which the Inside Volume is delivered.	Inside Rinse
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
Inside Volume	The quantity of liquid used to rinse the inside of the probe.	250 uL
Inside Flow Rate	The speed at which the Inside Volume moves out of the probe and into the inside rinse position in the rinse station. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	10 mL/min
Outside Volume	The quantity of liquid used to rinse the outside of the probe.	500 uL
Outside Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	10 mL/min
Inside Rinse Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the tube bottom for rinsing the probe at the inside rinse position in the rinse station.	0 mm
Outside Rinse Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the tube bottom for rinsing the probe at the outside rinse position in the rinse station.	0 mm

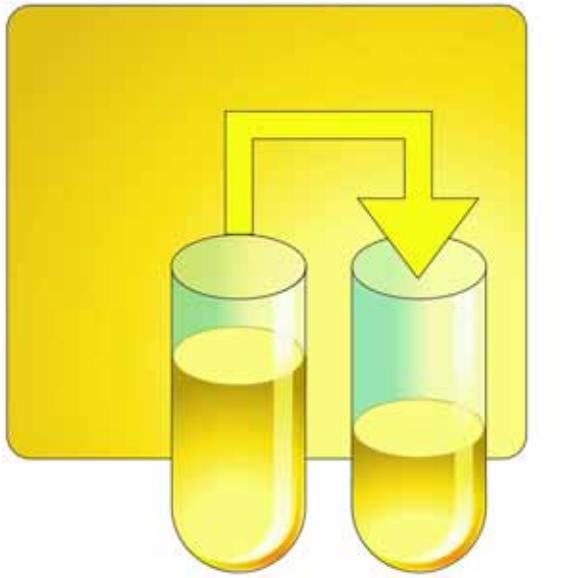
Dispense - Advanced/Rinsing Table *(Page 2 of 2)*

Dispense - Instruments

Property Name	*Description*	*Value*
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump or VPS that the task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	

Dispense - Instruments

Dispense - Sequence of Steps



The following is an overview for the sequence of steps.

1 **Aspirate** on page A-62
2 **Dispense** on page A-63
3 **Inside Rinse** on page A-64
4 **Outside Rinse** on page A-64

ASPIRATE

Reservoir

1 Move Z to Z Safe Height

Tray

1 Move Z to Z Safe Height
2 Aspirate Source Air Gap at Air Gap Flow Rate
3 Move probe to Source Well in Source Zone

4 Lower probe into well to Source Height
5 Aspirate Source Volume + Extra Volume at Source Flow Rate using Liquid Level Following, if selected
6 Move Z to Z Safe Height

Transfer Port

1 Move Z to Z Safe Height
2 Aspirate Source Air Gap at Air Gap Flow Rate
3 Move probe to well in Source Zone
4 Lower probe into well to Source Height
5 Set Transfer Port to On
6 Aspirate Source Volume + Extra Volume at Source Flow Rate
7 Set Transfer Port to Off
8 Move Z to Z Safe Height

DISPENSE

Reservoir

1 Move probe to Result Well in Result Zone
2 Lower probe into well to Result Height
3 Aspirate Source Volume (from Reservoir) at Source Flow Rate
4 Dispense Source Volume at Result Flow Rate using Liquid Level Following, if selected
   - If Source Volume is greater than syringe capacity, repeat steps 3–4 until Source Volume is delivered.
5 Wait Equilibration Time
6 Perform a Touch Off (X direction), if selected and move Z to Z Safe Height

Tray or Transfer Port

1 Move probe to Result Well in Result Zone
2 Lower probe into well to Result Height
3 Dispense Source Volume at Result Flow Rate using Liquid Level Following, if selected
4 Wait Equilibration Time
5 Perform a Touch Off (X direction), if selected and move Z to Z Safe Height

- If Source Volume is greater than syringe capacity, repeat aspirate (Air Gap and Extra Volume are not aspirated) and dispense until Source Volume is delivered.

6 Move probe to well in Inside Rinse Zone
7 Lower probe into well to Inside Rinse Height
8 Dispense Extra Volume + Source Air Gap at Result Flow Rate

INSIDE RINSE

1 Move Z to Z Safe Height
2 Move probe to well in Inside Rinse Zone
3 Lower probe into well to Inside Rinse Height
4 Aspirate Inside Volume (from Reservoir) at Inside Rinse Flow Rate
5 Dispense Inside Volume at Inside Rinse Flow Rate
6 Repeat steps 4–5 until Inside Volume delivered
7 Move Z to Z Safe Height

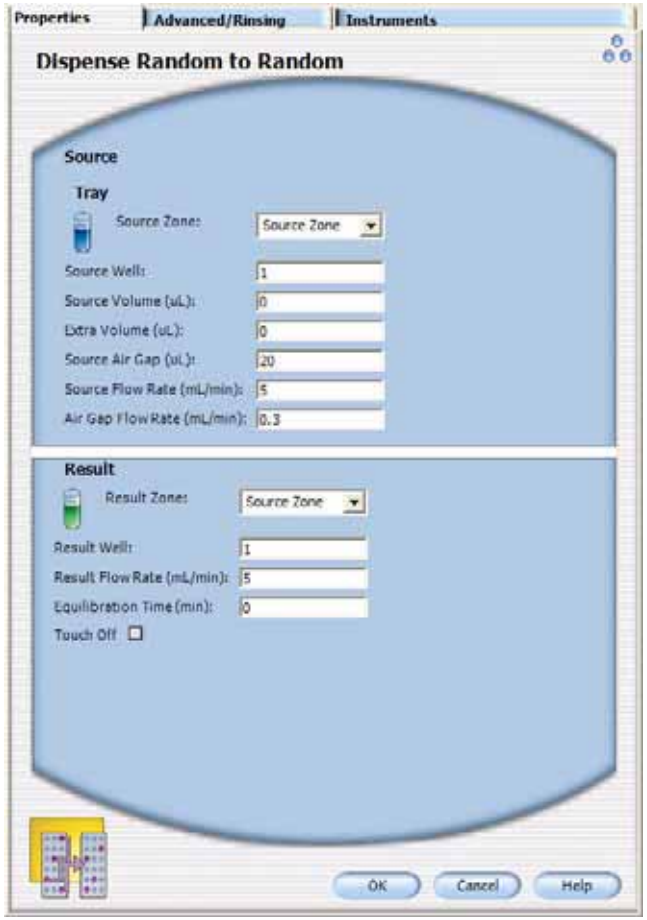
OUTSIDE RINSE

1 Move Z to Z Safe Height
2 Move probe into well in Outside Rinse Zone

3 Lower probe into well to Outside Rinse Height
4 Aspirate Outside Rinse Volume (from Reservoir) at Outside Rinse Flow Rate
5 Dispense Outside Rinse Volume at Outside Rinse Flow Rate.
6 Repeat steps 4–5 until Outside Rinse Volume delivered
7 Move Z to Z Safe Height

Dispense Random to Random

This task transfers liquid (source) from wells in the source zone to random wells in the result zone.



For more information about the properties on each tab, see:

Dispense Random to Random - Properties on page A-67

Dispense Random to Random - Advanced/Rinsing on page A-68

Dispense Random to Random - Instruments on page A-70

Dispense Random to Random - Sequence of Steps on page A-71

Dispense Random to Random - Properties

Property Name	*Brief Description*	*Default Value*
Tray Source Zone	The zone from which the Source Volume is drawn.	
Tray Source Well	The well in the Source Zone from which the Source Volume is drawn. When using a multiple-probe instrument, type #x where x is a value defined in the Sample List.	1
Tray Source Volume	The quantity of a sample.	0 uL
Tray Extra Volume	An additional volume to the Source Volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/reservoir solvent and the Source Volume.	0 uL
Tray Source Air Gap	The quantity of the air gap aspirated before the Source Volume.	20 uL
Tray Source Flow Rate	The speed at which the Source Volume and Extra Volume move into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	5 mL/min
Tray Air Gap Flow Rate	The speed at which the Source Air Gap moves into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	0.3 mL/min
Result Zone	The zone to which the Source Volume is delivered.	
Result Well	The well in the Result Zone to which the Source Volume is delivered. When using a multiple-probe instrument, type #x where x is a value defined in the Sample List.	1

Dispense Random to Random - Properties Table *(Page 1 of 2)*

Dispense Random to Random - Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Result Flow Rate	The speed at which the Source Volume moves out of the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	5 mL/min
Equilibration Time	Time the program waits after each dispense before moving out of the well.	0 min
Touch Off	Select Touch Off to move to the edge of the well after dispensing (in the X direction).	

Dispense Random to Random - Properties Table *(Page 2 of 2)*

Dispense Random to Random - Advanced/Rinsing

Property Name	*Brief Description*	*Default Value*
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated and up while it is dispensed. This selection changes the reference point for the Source Height and Result Height to the liquid surface. Initial Volumes should be set in the Sample List when using this option.	
Liquid Level Detection	When selected, the probe will stop when the instrument detects the liquid surface. This selection changes the reference point for the Source Height and Result Height to the height at which the liquid was detected. **Note:** If no liquid is detected, the probe will go to the bottom of the tube. This option can only be used on instruments that support Liquid Level Detection.	

Dispense Random to Random - Advanced/Rinsing Table *(Page 1 of 3)*

Dispense Random to Random - Advanced/Rinsing (Continued)

Property Name	*Brief Description*	*Default Value*
Sensitivity	Sensitivity is used to detect liquid when Liquid Level Detection is used. A low setting is the most sensitive and higher settings are less sensitive. Range is dependent on the instrument; consult the instrument's user's guide.	1
Source Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from a defined reference point (Tube Bottom unless Liquid Level Detection or Liquid Level Following is selected) when aspirating the Source Volume.	2 mm
Result Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the defined reference point (Tube Bottom unless Liquid Level Detection or Liquid Level Following is selected) when delivering to the Result Zone.	2 mm
Inside Rinse Zone	The zone to which the Inside Volume is delivered.	Inside Rinse
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
Inside Volume	The quantity of liquid used to rinse the inside of the probe.	250 uL
Inside Flow Rate	The speed at which the Inside Volume moves out of the probe and into the inside rinse position in the rinse station. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	10 mL/min
Outside Volume	The quantity of liquid used to rinse the outside of the probe.	500 uL

Dispense Random to Random - Advanced/Rinsing Table *(Page 2 of 3)*

Dispense Random to Random - Advanced/Rinsing (Continued)

Property Name	*Brief Description*	*Default Value*
Outside Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	10 mL/min
Inside Rinse Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the tube bottom for rinsing the probe at the inside rinse position in the rinse station.	0 mm
Outside Rinse Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the tube bottom for rinsing the probe at the outside rinse position in the rinse station.	0 mm

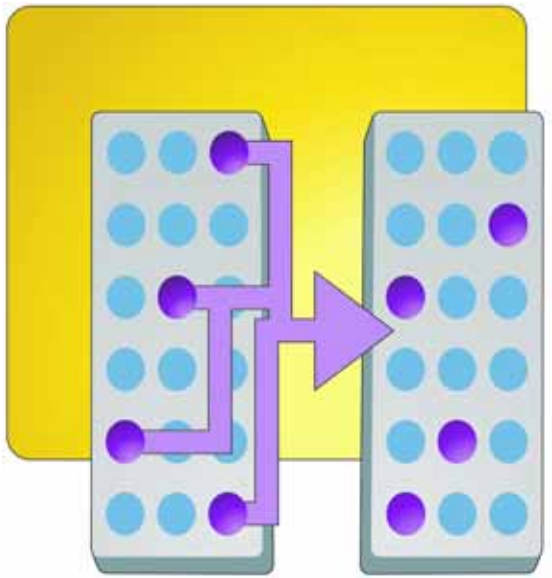
Dispense Random to Random - Advanced/Rinsing Table *(Page 3 of 3)*

Dispense Random to Random - Instruments

Property Name	*Brief Description*	*Default Value*
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump or VPS that the task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	

Dispense Random to Random - Instruments

Dispense Random to Random - Sequence of Steps



The following is an overview for the sequence of steps.

1 **Aspirate** on page A-71
2 **Dispense** on page A-71
3 **Inside Rinse** on page A-72
4 **Outside Rinse** on page A-72

ASPIRATE

1 Move Z to Z Safe Height
2 Aspirate Source Air Gap at Air Gap Flow Rate
3 Move probe to Source Well in Source Zone
4 Lower probe into well to Source Height
5 Aspirate Source Volume + Extra Volume at Source Flow Rate using Liquid Level Following, if selected
6 Move Z to Z Safe Height

DISPENSE

1 Move probe to Result Well in Result Zone
2 Lower probe into well to Result Height
3 Dispense Source Volume at Result Flow Rate using Liquid Level Following, if selected
4 Wait Equilibration Time
5 Perform a Touch Off (X direction), if selected and move Z to Z Safe Height

- If Source Volume is greater than syringe capacity, repeat aspirate (Air Gap and Extra Volume are not aspirated) and dispense until Source Volume is delivered

6 Move probe to well in Inside Rinse Zone
7 Lower probe into well to Inside Rinse Height
8 Dispense Extra Volume + Source Air Gap at Result Flow Rate

INSIDE RINSE

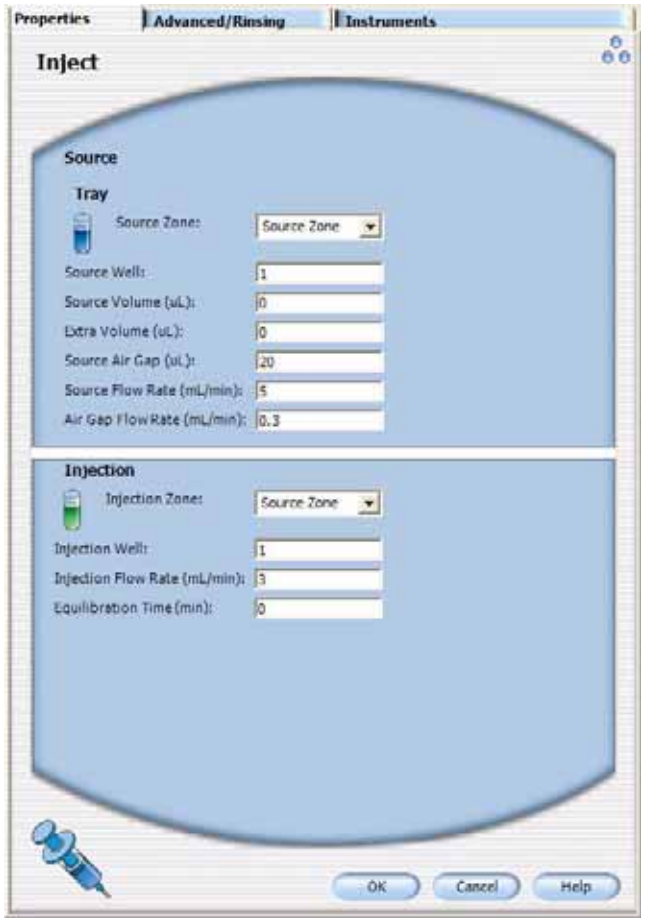
1 Move Z to Z Safe Height
2 Move probe to well in Inside Rinse Zone
3 Lower probe into well to Inside Rinse Height
4 Aspirate Inside Volume (from Reservoir) at Inside Rinse Flow Rate
5 Dispense Inside Volume at Inside Rinse Flow Rate
6 Repeat steps 4–5 until Inside Volume delivered
7 Move Z to Z Safe Height

OUTSIDE RINSE

1 Move Z to Z Safe Height
2 Move probe into well in Outside Rinse Zone
3 Lower probe into well to Outside Rinse Height
4 Aspirate Outside Rinse Volume (from Reservoir) at Outside Rinse Flow Rate
5 Dispense Outside Rinse Volume at Outside Rinse Flow Rate.
6 Repeat steps 4–5 until Outside Rinse Volume delivered
7 Move Z to Z Safe Height

Inject

This task aspirates the specified volume of liquid (source), switches the injection valve to LOAD, dispenses the volume to the wells of the injection zone, and then switches the injection valve to INJECT.



For more information about the properties on each tab, see:

Inject - Properties on page A-74

Inject - Advanced/Rinsing on page A-75

Inject - Instruments on page A-77

Inject - Sequence of Steps on page A-78

Inject - Properties

Property Name	*Brief Description*	*Default Value*
Source Zone	The zone from which the Source Volume is drawn.	
Source Well	The well in the Source Zone from which the Source Volume is drawn. When using a multiple-probe instrument, type #x where x is a value defined in the Sample List.	1
Source Volume	The quantity of a sample.	0 uL
Extra Volume	An additional volume to the Source Volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/reservoir solvent and the Source Volume.	0 uL
Source Air Gap	The quantity of the air gap aspirated before the Source Volume.	20 uL
Source Flow Rate	The speed at which the Source Volume and Extra Volume move into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	5 mL/min
Air Gap Flow Rate	The speed at which the Source Air Gap moves into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	0.3 mL/min
Injection Zone	The zone to which the Source Volume is dispensed.	
Injection Well	The well in the Injection Zone to which the Source Volume is delivered. When using a multiple-probe instrument, type #x where x is a value defined in the Sample List.	1

Inject - Properties Table *(Page 1 of 2)*

Inject - Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Injection Flow Rate	The speed at which the Source Volume moves out of the probe and into the injection port.	3 mL/min
Equilibration Time	Time the program waits after dispensing to the injection port before moving out of the well.	0 min

Inject - Properties Table *(Page 2 of 2)*

Inject - Advanced/Rinsing

Property Name	*Brief Description*	*Default Value*
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated and up while it is dispensed. This selection changes the reference point for the Source Height and Inject Height to the liquid surface. Initial Volumes should be set in the Sample List when using this option.	
Liquid Level Detection	When selected, the probe will stop when the instrument detects the liquid surface. This selection changes the reference point for the Source Height and Inject Height to the height at which the liquid was detected. **Note:** If no liquid is detected, the probe will go to the bottom of the tube. This option can only be used on instruments that support Liquid Level Detection.	
Sensitivity	Sensitivity is used to detect liquid when Liquid Level Detection is used. A low setting is the most sensitive and higher settings are less sensitive. Range is dependent on the instrument; consult the instrument's user's guide.	1

Inject - Advanced/Rinsing Table *(Page 1 of 3)*

Inject - Advanced/Rinsing (Continued)

Property Name	*Brief Description*	*Default Value*
Source Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from a defined reference point (Tube Bottom unless Liquid Level Detection or Liquid Level Following is selected) when aspirating the Source Volume.	2 mm
Inject Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the tube bottom when dispensing to the Injection Zone.	2 mm
Inside Rinse Zone	The zone to which the Inside Volume is delivered.	Inside Rinse
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
Inside Volume	The quantity of liquid used to rinse the inside of the probe.	250 uL
Inside Flow Rate	The speed at which the Inside Volume moves out of the probe and into the inside rinse position in the rinse station. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	10 mL/min
Outside Volume	The quantity of liquid used to rinse the outside of the probe.	500 uL
Outside Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	10 mL/min

Inject - Advanced/Rinsing Table *(Page 2 of 3)*

Inject - Advanced/Rinsing (Continued)

Property Name	*Brief Description*	*Default Value*
Inside Rinse Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the tube bottom for rinsing the probe at the inside rinse position in the rinse station.	0 mm
Outside Rinse Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the tube bottom for rinsing the probe at the outside rinse position in the rinse station.	0 mm

Inject - Advanced/Rinsing Table ***(Page 3 of 3)***

Inject - Instruments

Property Name	*Brief Description*	*Default Value*
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump or VPS that the task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	
Injector	The injector or injection module that the task will affect.	

Inject - Instruments

Inject - Sequence of Steps

The following is an overview for the sequence of steps.

1 **Aspirate** on page A-78
2 **Dispense** on page A-78
3 **Inside Rinse** on page A-79
4 **Outside Rinse** on page A-79

ASPIRATE

1 Move Z to Z Safe Height
2 Aspirate Source Air Gap at Air Gap Flow Rate
3 Move probe to Source Well in Source Zone
4 Lower probe into well to Source Height
5 Aspirate Source Volume + Extra Volume at Source Flow Rate using Liquid Level Following, if selected
6 Move Z to Z Safe Height
7 Set injection valve position to Load

DISPENSE

1 Move probe to Injection Well in Injection Zone
2 Lower probe into well to Inject Height
3 Dispense Source Volume at Injection Flow Rate
4 Wait Equilibration Time
5 Set injection valve position to Inject
6 Move Z to Z Safe Height

7 Move probe to well in Inside Rinse Zone
8 Lower probe into well to Inside Rinse Height
9 Dispense Extra Volume + Source Air Gap at Result Flow Rate

INSIDE RINSE

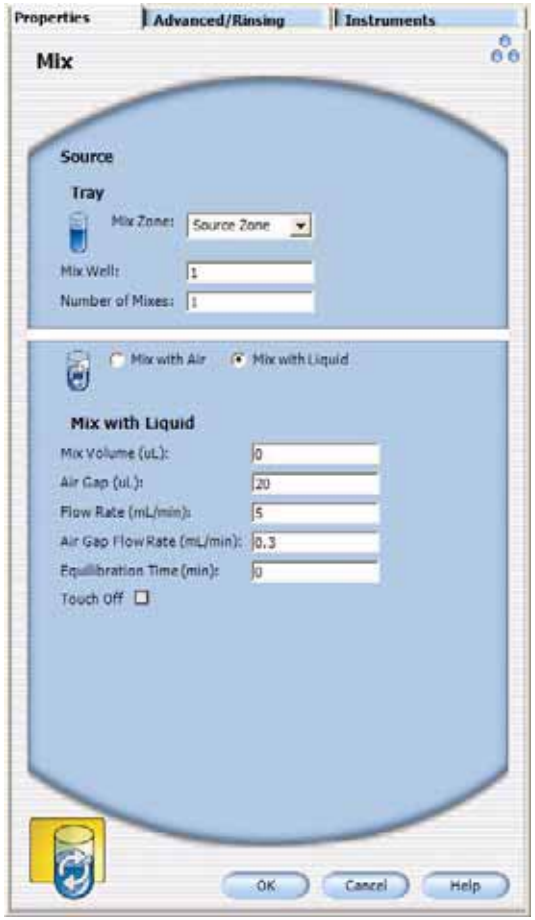
1 Move Z to Z Safe Height
2 Move probe to well in Inside Rinse Zone
3 Lower probe into well to Inside Rinse Height
4 Aspirate Inside Volume (from Reservoir) at Inside Rinse Flow Rate
5 Dispense Inside Volume at Inside Rinse Flow Rate
6 Repeat steps 4–5 until Inside Volume delivered
7 Move Z to Z Safe Height

OUTSIDE RINSE

1 Move Z to Z Safe Height
2 Move probe into well in Outside Rinse Zone
3 Lower probe into well to Outside Rinse Height
4 Aspirate Outside Rinse Volume (from Reservoir) at Outside Rinse Flow Rate
5 Dispense Outside Rinse Volume at Outside Rinse Flow Rate.
6 Repeat steps 4–5 until Outside Rinse Volume delivered
7 Move Z to Z Safe Height

Mix

This task aspirates air or liquid and then dispenses it into a well a specified number of times.



For more information about the properties on each tab, see:

Mix - Properties on page A-81

Mix - Advanced/Rinsing on page A-83

Mix - Instruments on page A-85

Mix - Sequence of Steps on page A-85

Mix - Properties

Property Name	*Brief Description*	*Default Value*
Mix Zone	The zone in which the mix is performed.	
Mix Well	The well in the Mix Zone in which the mix is performed. When using a multiple-probe instrument, type #x where x is a value defined in the Sample List.	1
Number of Mixes	Number of times the task should repeat the commands related to mixing.	1
Mix with Air/Mix with Liquid	Select Mix with Air or Mix with Liquid.	Mix with Liquid
Mix with Liquid Mix Volume	The quantity of liquid used as part of a mixing process.	0 uL
Mix with Liquid Air Gap	The quantity of air gap aspirated before the Mix Volume.	20 uL
Mix with Liquid Flow Rate	The speed at which the Mix Volume moves into and out of the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	5 mL/min
Mix with Liquid Air Gap Flow Rate	The speed at which the Air Gap moves into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	0.3 mL/min
Mix with Liquid Equilibration Time	Time the program waits after each dispense before moving out of the well.	0 min

Mix - Properties Table *(Page 1 of 2)*

Mix - Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Mix with Liquid Touch Off	Select Touch Off to move to the edge of the well after dispensing (in the X direction).	
Mix with Air Mix Volume	The quantity of air used as part of a mixing process.	0 uL
Mix with Air Air Gap	The quantity of air gap aspirated before the Mix Volume.	20 uL
Mix with Air Flow Rate	The speed at which the Mix Volume moves into and out of the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	5 mL/min
Mix with Air Equilibration Time	Time the program waits after each dispense before moving out of the well.	0 min
Mix with Air Touch Off	Select Touch Off to move to the edge of the well after dispensing (in the X direction).	

Mix - Properties Table *(Page 2 of 2)*

Mix - Advanced/Rinsing

Property Name	*Brief Description*	*Default Value*
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated and up while it is dispensed. This selection changes the reference point for the Source Height and Result Height to the liquid surface. Initial Volumes should be set in the Sample List when using this option.	
Liquid Level Detection	When selected, the probe will stop when the instrument detects the liquid surface. This selection changes the reference point for the Source Height and Result Height to the height at which the liquid was detected. **Note:** If no liquid is detected, the probe will go to the bottom of the tube. This option can only be used on instruments that support Liquid Level Detection.	
Sensitivity	Sensitivity is used to detect liquid when Liquid Level Detection is used. A low setting is the most sensitive and higher settings are less sensitive. Range is dependent on the instrument; consult the instrument's user's guide.	1
Source Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from a defined reference point (Tube Bottom unless Liquid Level Detection or Liquid Level Following is selected) when aspirating the Mix Volume.	2 mm
Result Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the defined reference point (Tube Bottom unless Liquid Level Detection or Liquid Level Following is selected) when delivering to the Mix Zone.	2 mm

Mix - Advanced/Rinsing Table *(Page 1 of 2)*

Mix - Advanced/Rinsing (Continued)

Property Name	*Brief Description*	*Default Value*
Inside Rinse Zone	The zone to which the Inside Volume is delivered.	Inside Rinse
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
Inside Volume	The quantity of liquid used to rinse the inside of the probe.	250 uL
Inside Flow Rate	The speed at which the Inside Volume moves out of the probe and into the inside rinse position in the rinse station. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	10 mL/min
Outside Volume	The quantity of liquid used to rinse the outside of the probe.	500 uL
Outside Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	10 mL/min
Inside Rinse Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the tube bottom for rinsing the probe at the inside rinse position in the rinse station.	0 mm
Outside Rinse Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the tube bottom for rinsing the probe at the outside rinse position in the rinse station.	0 mm

Mix - Advanced/Rinsing Table *(Page 2 of 2)*

Mix - Instruments

Property Name	*Brief Description*	*Default Value*
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump or VPS that the task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	

Mix - Instruments

Mix - Sequence of Steps

The following is an overview for the sequence of steps.

1 **Mix with Liquid** on page A-85
2 **Mix with Air** on page A-86
3 **Inside Rinse** on page A-87
4 **Outside Rinse** on page A-87

MIX WITH LIQUID

1 Move Z to Z Safe Height
2 Aspirate Air Gap at Air Gap Flow Rate
3 Move probe to Mix Well in Mix Zone
4 Lower probe into well to Source Height
5 Aspirate Mix Volume at Flow Rate using Liquid Level Following, if selected
6 Lower probe into well to Result Height
7 Dispense Mix Volume at Flow Rate using Liquid Level Following, if selected

8 Wait Equilibration Time
9 Repeat 3–8 until Number of Mixes is complete
10 Perform a Touch Off (X direction), if selected and move Z to Z Safe Height
11 Move probe to well in Inside Rinse Zone
12 Lower probe into well to Inside Rinse Height
13 Dispense Air Gap at Flow Rate
14 Move Z to Z Safe Height

MIX WITH AIR

1 Move Z to Z Safe Height
2 Aspirate Air Gap at Flow Rate
3 Move probe to Mix Well in Mix Zone
4 Move Z to Z Safe Height
5 Aspirate Mix Volume at Flow Rate
6 Lower probe into well to Result Height
7 Dispense Mix Volume at Flow Rate
8 Wait Equilibration Time
9 Repeat 4–8 until Number of Mixes is complete
10 Perform a Touch Off (X direction), if selected and move Z to Z Safe Height
11 Move probe to well in Inside Rinse Zone
12 Lower probe into well to Inside Rinse Height

13 Dispense Air Gap at Flow Rate

14 Move Z to Z Safe Height

INSIDE RINSE

1 Move Z to Z Safe Height

2 Move probe to well in Inside Rinse Zone

3 Lower probe into well to Inside Rinse Height

4 Aspirate Inside Volume (from Reservoir) at Inside Rinse Flow Rate

5 Dispense Inside Volume at Inside Rinse Flow Rate

6 Repeat steps 4–5 until Inside Volume delivered

7 Move Z to Z Safe Height

OUTSIDE RINSE

1 Move Z to Z Safe Height

2 Move probe into well in Outside Rinse Zone

3 Lower probe into well to Outside Rinse Height

4 Aspirate Outside Rinse Volume (from Reservoir) at Outside Rinse Flow Rate

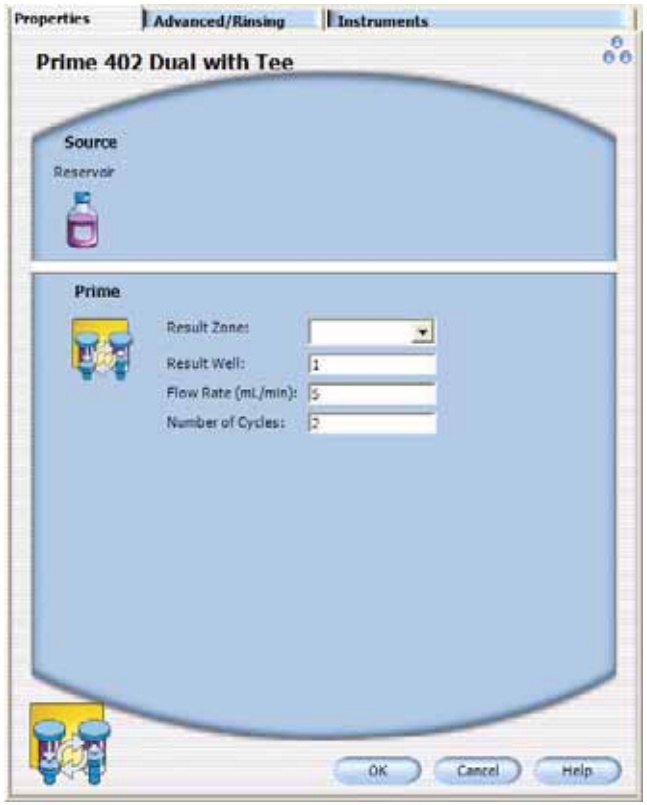
5 Dispense Outside Rinse Volume at Outside Rinse Flow Rate.

6 Repeat steps 4–5 until Outside Rinse Volume delivered

7 Move Z to Z Safe Height

Prime 402 Dual with Tee

This task primes the 402 Pump Dual with Tee in the specified zone. It aspirates the full syringe capacity (for each syringe) and dispenses it to the wells in the result zone the specified number of cycles.



For more information about the properties on each tab, see:

Prime 402 Dual with Tee - Properties on page A-89

Prime 402 Dual with Tee - Advanced/Rinsing on page A-89

Prime 402 Dual with Tee - Instruments on page A-91

Prime 402 Dual with Tee - Sequence of Steps on page A-91

Prime 402 Dual with Tee - Properties

Property Name	*Brief Description*	*Default Value*
Source	Source for the Prime 402 Dual Pump with Tee is Reservoir.	Reservoir
Result Zone	The zone to which the Syringe Volume is delivered.	Inside Rinse
Result Well	The well in the Result Zone to which the Syringe Volume is delivered. When using a multiple-probe instrument, type #x where x is a value defined in the Sample List.	1
Result Flow Rate	The speed at which the reservoir solvent moves into the syringe and the probe and into the Result Wells. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	5 mL/min
Number of Cycles	Enter the number of times to repeat aspirating and dispensing	2

Prime 402 Dual with Tee - Properties

Prime 402 Dual with Tee - Advanced/Rinsing

Property Name	*Brief Description*	*Default Value*
Result Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the tube bottom when delivering to the Result Zone.	2 mm
Inside Rinse Zone	The zone to which the Inside Volume is delivered.	Inside Rinse
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse

Prime 402 Dual with Tee - Advanced/Rinsing Table *(Page 1 of 2)*

Prime 402 Dual with Tee - Advanced/Rinsing (Continued)

Property Name	*Brief Description*	*Default Value*
Inside Volume	The quantity of liquid used to rinse the inside of the probe.	250 uL
Inside Flow Rate	The speed at which the Inside Volume moves out of the probe and into the inside rinse position in the rinse station. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	10 mL/min
Outside Volume	The quantity of liquid used to rinse the outside of the probe.	500 uL
Outside Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	10 mL/min
Inside Rinse Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the tube bottom for rinsing the probe at the inside rinse position in the rinse station.	0 mm
Outside Rinse Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the tube bottom for rinsing the probe at the outside rinse position in the rinse station.	0 mm

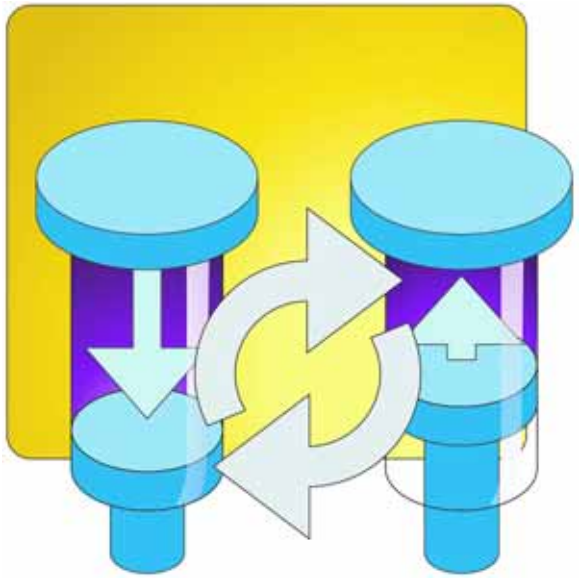
Prime 402 Dual with Tee - Advanced/Rinsing Table *(Page 2 of 2)*

Prime 402 Dual with Tee - Instruments

Property Name	*Brief Description*	*Default Value*
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump or VPS that the task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	

Prime 402 Dual with Tee - Instruments

Prime 402 Dual with Tee - Sequence of Steps



The following is an overview for the sequence of steps.

1 **Aspirate** on page A-91
2 **Inside Rinse** on page A-92
3 **Outside Rinse** on page A-92

ASPIRATE

1 Move Z to Z Safe Height
2 Move probe to Result Well in Result Zone
3 Lower probe to Result Height from Tube Bottom
4 Aspirate syringe volume (from Reservoir) with the left syringe
5 Dispense syringe volume with the left syringe
6 Repeat steps 4–5 for the Number of Cycles
7 Aspirate the volume needed to prime the right syringe (right syringe volume x Number of Cycles) using the left syringe (from Reservoir)

8 Dispense the right syringe volume using the left syringe, while simultaneously aspirating using the right syringe
9 Dispense the right syringe column using the right syringe
10 Repeat steps 8–9 for the Number of Cycles. Repeat step 7, if necessary.

INSIDE RINSE

1 Move Z to Z Safe Height
2 Move probe to well in Inside Rinse Zone
3 Lower probe into well to Inside Rinse Height
4 Aspirate Inside Volume (from Reservoir) at Inside Rinse Flow Rate
5 Dispense Inside Volume at Inside Rinse Flow Rate
6 Repeat steps 4–5 until Inside Volume delivered
7 Move Z to Z Safe Height

OUTSIDE RINSE

1 Move Z to Z Safe Height
2 Move probe into well in Outside Rinse Zone
3 Lower probe into well to Outside Rinse Height
4 Aspirate Outside Rinse Volume (from Reservoir) at Outside Rinse Flow Rate
5 Dispense Outside Rinse Volume at Outside Rinse Flow Rate.
6 Repeat steps 4–5 until Outside Rinse Volume delivered
7 Move Z to Z Safe Height

Prime Pump

This task primes the pump in the specified zone. It aspirates the specified volume (or the syringe capacity) from the reservoir and then dispenses to the wells in the result zone.

For more information about the properties on each tab, see:

Prime Pump - Properties on page A-94

Prime Pump - Advanced/Rinsing on page A-94

Prime Pump - Instruments on page A-96

Prime Pump - Sequence of Steps on page A-96

Prime Pump - Properties

Property Name	*Brief Description*	*Default Value*
Source	Source for the Prime Pump is reservoir.	Reservoir
Prime Volume	The quantity of the liquid used for priming.	0 uL
Source Flow Rate	The speed at which the Prime Volume moves into the syringe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	10 mL/min
Result Zone	The zone to which the Prime Volume is delivered.	Inside Rinse
Result Well	The well in the Result Zone to which the Prime Volume is delivered. When using a multiple-probe instrument, type #x where x is a value defined in the Sample List.	1
Result Flow Rate	The speed at which the Prime Volume moves out of the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	5 mL/min

Prime Pump - Properties

Prime Pump - Advanced/Rinsing

Property Name	*Brief Description*	*Default Value*
Result Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the tube bottom when delivering to the Result Zone.	2 mm
Inside Rinse Zone	The zone to which the Inside Volume is delivered.	Inside Rinse
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse

Prime Pump - Advanced/Rinsing Table *(Page 1 of 2)*

Prime Pump - Advanced/Rinsing (Continued)

Property Name	*Brief Description*	*Default Value*
Inside Volume	The quantity of liquid used to rinse the inside of the probe.	250 uL
Inside Flow Rate	The speed at which the Inside Volume moves out of the probe and into the inside rinse position in the rinse station. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	10 mL/min
Outside Volume	The quantity of liquid used to rinse the outside of the probe.	500 uL
Outside Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	10 mL/min
Inside Rinse Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the tube bottom for rinsing the probe at the inside rinse position in the rinse station.	0 mm
Outside Rinse Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the tube bottom for rinsing the probe at the outside rinse position in the rinse station.	0 mm

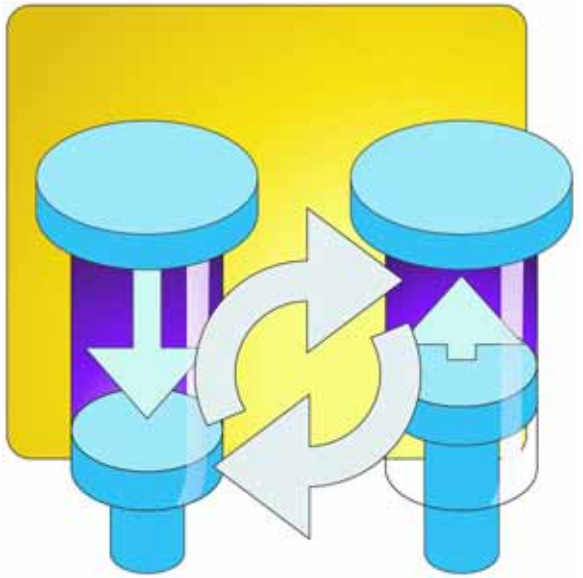
Prime Pump - Advanced/Rinsing Table *(Page 2 of 2)*

Prime Pump - Instruments

Property Name	*Brief Description*	*Default Value*
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump or VPS that the task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	

Prime Pump - Instruments

Prime Pump - Sequence of Steps



The following is an overview for the sequence of steps.

1 **Aspirate** on page A-96
2 **Inside Rinse** on page A-97
3 **Outside Rinse** on page A-97

ASPIRATE

1 Move Z to Z Safe Height
2 Aspirate Prime Volume (from Reservoir) at Source Flow Rate
3 Move probe to Result Well in Result Zone
4 Lower probe into well to Result Height

5 Dispense Prime Volume at Result Flow Rate
6 Repeat steps 2–5 until Prime Volume has been delivered

INSIDE RINSE

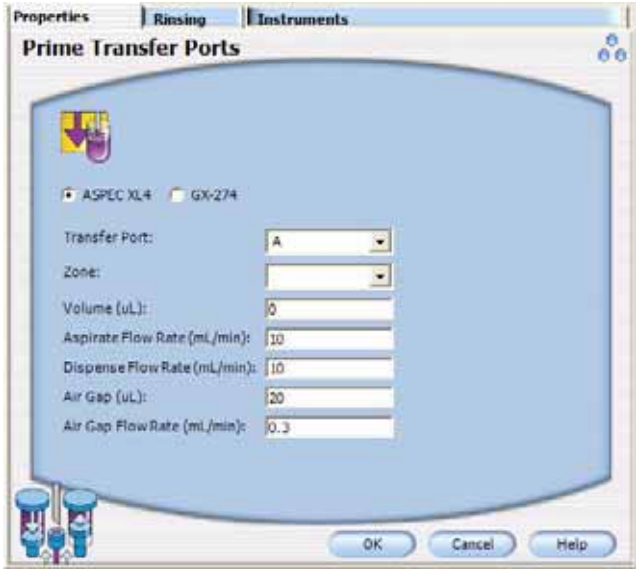
1 Move Z to Z Safe Height
2 Move probe to well in Inside Rinse Zone
3 Lower probe into well to Inside Rinse Height
4 Aspirate Inside Volume (from Reservoir) at Inside Rinse Flow Rate
5 Dispense Inside Volume at Inside Rinse Flow Rate
6 Repeat steps 4–5 until Inside Volume delivered
7 Move Z to Z Safe Height

OUTSIDE RINSE

1 Move Z to Z Safe Height
2 Move probe into well in Outside Rinse Zone
3 Lower probe into well to Outside Rinse Height
4 Aspirate Outside Rinse Volume (from Reservoir) at Outside Rinse Flow Rate
5 Dispense Outside Rinse Volume at Outside Rinse Flow Rate.
6 Repeat steps 4–5 until Outside Rinse Volume delivered
7 Move Z to Z Safe Height

Prime Transfer Ports

This task primes the transfer ports on ASPEC XL4 or GX-274. It aspirates the specified volume (or the syringe capacity) from the transfer port and then dispenses to the wells of the Inside Rinse Zone.



For more information about the properties on each tab, see:

Prime Transfer Ports - Properties on page A-98

Prime Transfer Ports - Rinsing on page A-100

Prime Transfer Ports - Instruments on page A-101

Prime Transfer Ports - Sequence of Steps on page A-102

Prime Transfer Ports - Properties

Property Name	*Brief Description*	*Default Value*
ASPEC XL4 Transfer Port	The transfer port on the ASPEC XL4 to prime.	A
ASPEC XL4 Zone	The zone from which the Volume is drawn.	

Prime Transfer Ports - Properties Table *(Page 1 of 3)*

Prime Transfer Ports - Properties (Continued)

Property Name	*Brief Description*	*Default Value*
ASPEC XL4 Volume	The quantity of liquid aspirated for the prime.	0 uL
ASPEC XL4 Aspirate Flow Rate	The speed at which the Volume moves into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	10 mL/min
ASPEC XL4 Dispense Flow Rate	The speed at which the Volume moves out of the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	10 mL/min
ASPEC XL4 Air Gap	The quantity of the air gap aspirated before the Volume.	20 uL
ASPEC XL4 Air Gap Flow Rate	The speed at which the Air Gap moves into the probe.	0.3 mL/min
GX-274 Transfer Port	The transfer port on the GX-274 to prime.	A
GX-274 Zone	The zone from which the Volume is drawn.	
GX-274 Volume	The quantity of liquid aspirated for the prime.	0 uL

Prime Transfer Ports - Properties Table *(Page 2 of 3)*

Prime Transfer Ports - Properties (Continued)

Property Name	*Brief Description*	*Default Value*
GX-274 Aspirate Flow Rate	The speed at which the Volume moves into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	10 mL/min
GX-274 Dispense Flow Rate	The speed at which the Volume moves out of the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	10 mL/min
GX-274 Air Gap	The quantity of the air gap aspirated before the Volume.	20 uL
GX-274 Air Gap Flow Rate	The speed at which the Air Gap moves into the probe.	0.3 mL/min

Prime Transfer Ports - Properties Table *(Page 3 of 3)*

Prime Transfer Ports - Rinsing

Property Name	*Brief Description*	*Default Value*
Inside Rinse Zone	The zone to which the Inside Volume is delivered.	Inside Rinse
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
Inside Volume	The quantity of liquid used to rinse the inside of the probe.	250 uL

Prime Transfer Ports - Rinsing Table *(Page 1 of 2)*

Prime Transfer Ports - Rinsing (Continued)

Property Name	*Brief Description*	*Default Value*
Inside Flow Rate	The speed at which the Inside Volume moves out of the probe and into the inside rinse position in the rinse station. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	10 mL/min
Outside Volume	The quantity of liquid used to rinse the outside of the probe.	500 uL
Outside Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	10 mL/min
Inside Rinse Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the tube bottom for rinsing the probe at the inside rinse position in the rinse station.	0 mm
Outside Rinse Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the tube bottom for rinsing the probe at the outside rinse position in the rinse station.	0 mm

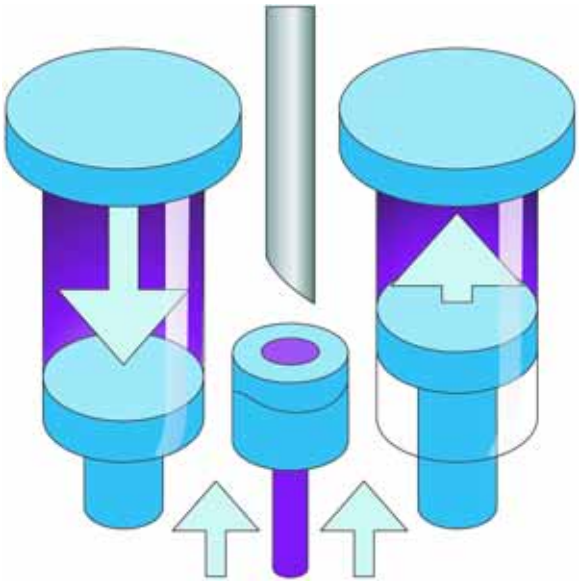
Prime Transfer Ports - Rinsing Table *(Page 2 of 2)*

Prime Transfer Ports - Instruments

Property Name	*Brief Description*	*Default Value*
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump or VPS that the task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	

Prime Transfer Ports - Instruments

Prime Transfer Ports - Sequence of Steps



The following is an overview for the sequence of steps.

1 **Aspirate/Dispense** on page A-102
2 **Inside Rinse** on page A-103
3 **Outside Rinse** on page A-103

ASPIRATE/DISPENSE

1 Move Z to Z Safe Height
2 Aspirate Air Gap at Air Gap Flow Rate
3 Move Z to Z Safe Height
4 Move probe into well in Zone
5 Lower probe to Tube Bottom +2 mm
6 Set Transfer Port to On
7 Aspirate Volume at Aspirate Flow Rate
8 Set Transfer Port to Off
9 Move Z to Z Safe Height
10 Move probe to well in Inside Rinse Zone
11 Dispense Volume at Dispense Flow Rate

- If Volume is greater than syringe capacity, repeat steps 3–11 until volume is delivered

12 Dispense Air Gap at Dispense Flow Rate

13 Move Z to Z Safe Height

INSIDE RINSE

1 Move Z to Z Safe Height

2 Move probe to well in Inside Rinse Zone

3 Lower probe into well to Inside Rinse Height

4 Aspirate Inside Volume (from Reservoir) at Inside Rinse Flow Rate

5 Dispense Inside Volume at Inside Rinse Flow Rate

6 Repeat steps 4–5 until Inside Volume delivered

7 Move Z to Z Safe Height

OUTSIDE RINSE

1 Move Z to Z Safe Height

2 Move probe into well in Outside Rinse Zone

3 Lower probe into well to Outside Rinse Height

4 Aspirate Outside Rinse Volume (from Reservoir) at Outside Rinse Flow Rate

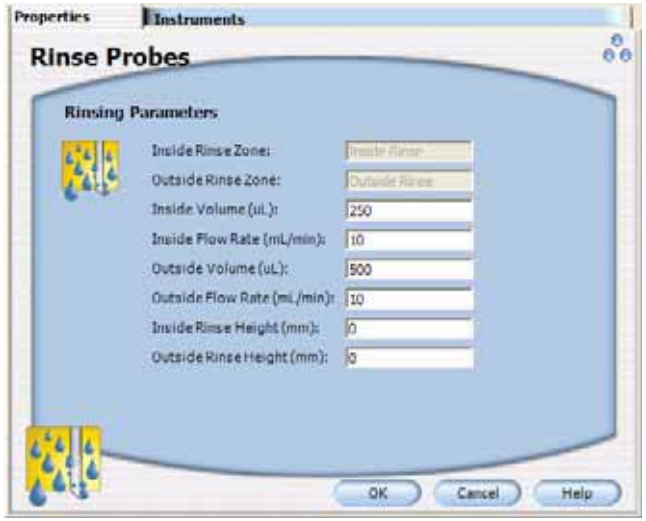
5 Dispense Outside Rinse Volume at Outside Rinse Flow Rate.

6 Repeat steps 4–5 until Outside Rinse Volume delivered

7 Move Z to Z Safe Height

Rinse Probes

This task rinses the inside and outside of the probe using liquid from the pump reservoir.



For more information about the properties on each tab, see:

Rinse Probes - Properties on page A-104

Rinse Probes - Instruments on page A-105

Rinse Probes - Sequence of Steps on page A-106

Rinse Probes - Properties

Property Name	*Brief Description*	*Default Value*
Inside Rinse Zone	The zone to which the Inside Volume is delivered.	Inside Rinse
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
Inside Volume	The quantity of liquid used to rinse the inside of the probe.	250 uL

Rinse Probes - Properties Table *(Page 1 of 2)*

Rinse Probes - Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Inside Flow Rate	The speed at which the Inside Volume moves out of the probe and into the inside rinse position in the rinse station. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	10 mL/min
Outside Volume	The quantity of liquid used to rinse the outside of the probe.	500 uL
Outside Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	10 mL/min
Inside Rinse Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the tube bottom for rinsing the probe at the inside rinse position in the rinse station.	0 mm
Outside Rinse Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the tube bottom for rinsing the probe at the outside rinse position in the rinse station.	0 mm

Rinse Probes - Properties Table *(Page 2 of 2)*

Rinse Probes - Instruments

Property Name	*Brief Description*	*Default Value*
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump or VPS that the task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	

Rinse Probes - Instruments

Rinse Probes - Sequence of Steps

The following is an overview for the sequence of steps.

1 **Inside Rinse** on page A-106
2 **Outside Rinse** on page A-106

INSIDE RINSE

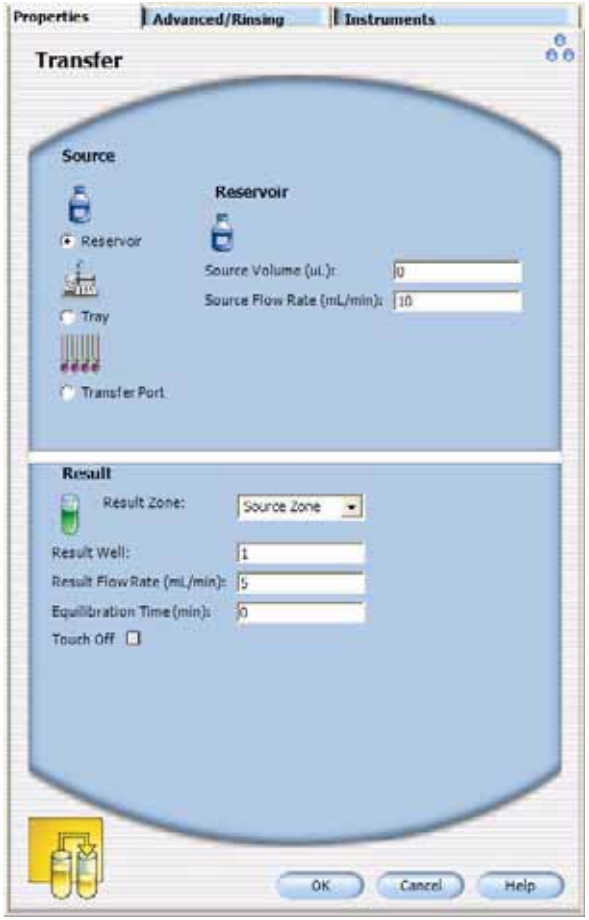
1 Move Z to Z Safe Height
2 Move probe to well in Inside Rinse Zone
3 Lower probe into well to Inside Rinse Height
4 Aspirate Inside Volume (from Reservoir) at Inside Rinse Flow Rate
5 Dispense Inside Volume at Inside Rinse Flow Rate
6 Repeat steps 4–5 until Inside Volume delivered
7 Move Z to Z Safe Height

OUTSIDE RINSE

1 Move Z to Z Safe Height
2 Move probe into well in Outside Rinse Zone
3 Lower probe into well to Outside Rinse Height
4 Aspirate Outside Rinse Volume (from Reservoir) at Outside Rinse Flow Rate
5 Dispense Outside Rinse Volume at Outside Rinse Flow Rate.
6 Repeat steps 4–5 until Outside Rinse Volume delivered
7 Move Z to Z Safe Height

Transfer

This task aspirates the specified volume of liquid (source) from the reservoir, tray, or transfer ports and then dispenses the volume to the wells of the result zone.



For more information about the properties on each tab, see:

Transfer - Properties on page A-108

Transfer - Advanced/Rinsing on page A-111

Transfer - Instruments on page A-113

Transfer - Sequence of Steps on page A-113

Transfer - Properties

Property Name	*Brief Description*	*Default Value*
Source	Select Reservoir, Tray, or Transfer Port.	Reservoir
Reservoir Source Volume	The quantity of a sample.	0 uL
Reservoir Source Flow Rate	The speed at which the Source Volume moves into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	10 mL/min
Tray Source Zone	The zone from which the Source Volume is drawn.	
Tray Source Well	The well in the Source Zone from which the Source Volume is drawn. When using a multiple-probe instrument, type #x where x is a value defined in the Sample List.	1
Tray Source Volume	The quantity of a sample.	0 uL
Tray Extra Volume	An additional volume to the Source Volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/reservoir solvent and the Source Volume.	0 uL
Tray Source Air Gap	The quantity of the air gap aspirated before the Source Volume.	20 uL

Transfer - Properties Table *(Page 1 of 3)*

Transfer - Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Tray Source Flow Rate	The speed at which the Source Volume and Extra Volume move into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	5 mL/min
Tray Air Gap Flow Rate	The speed at which the Source Air Gap moves into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	0.3 mL/min
Transfer Port Source Zone	The zone from which the Source Volume is drawn.	
Transfer Port Transfer Port	Select a Transfer Port to activate for the task.	A
Transfer Port Source Volume	The quantity of a sample.	0 uL
Transfer Port Extra Volume	An additional volume to the Source Volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/reservoir solvent and the Source Volume.	0 uL
Transfer Port Source Air Gap	The quantity of the air gap aspirated before the Source Volume.	20 uL
Transfer Port Source Flow Rate	The speed at which the Source Volume and Extra Volume move into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	5 mL/min

Transfer - Properties Table *(Page 2 of 3)*

Transfer - Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Transfer Port Air Gap Flow Rate	The speed at which the Source Air Gap moves into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	0.3 mL/min
Result Zone	The zone to which the Source Volume is delivered.	
Result Well	The well in the Result Zone to which the Source Volume is delivered. When using a multiple-probe instrument, type #x where x is a value defined in the Sample List.	1
Result Flow Rate	The speed at which the Source Volume moves out of the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	5 mL/min
Equilibration Time	Time the program waits after each dispense before moving out of the well.	0 min
Touch Off	Select Touch Off to move to the edge of the well after dispensing (in the X direction).	

Transfer - Properties Table *(Page 3 of 3)*

Transfer - Advanced/Rinsing

Property Name	*Brief Description*	*Default Value*
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated and up while it is dispensed. This selection changes the reference point for the Source Height, Solution Height, and Result Height to the liquid surface. Initial Volumes should be set in the Sample List when using this option.	
Liquid Level Detection	When selected, the probe will stop when the instrument detects the liquid surface. This selection changes the reference point for the Source Height, Solution Height, and Result Height to the height at which the liquid was detected. **Note:** If no liquid is detected, the probe will go to the bottom of the tube. This option can only be used on instruments that support Liquid Level Detection.	
Sensitivity	Sensitivity is used to detect liquid when Liquid Level Detection is used. A low setting is the most sensitive and higher settings are less sensitive. Range is dependent on the instrument; consult the instrument's user's guide.	1
Source Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from a defined reference point (Tube Bottom unless Liquid Level Detection or Liquid Level Following is selected) when aspirating the Source Volume.	2 mm
Result Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the defined reference point (Tube Bottom unless Liquid Level Detection or Liquid Level Following is selected) when delivering to the Result Zone.	2 mm

Transfer - Advanced/Rinsing Table *(Page 1 of 2)*

Transfer - Advanced/Rinsing (Continued)

Property Name	*Brief Description*	*Default Value*
Inside Rinse Zone	The zone to which the Inside Volume is delivered.	Inside Rinse
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
Inside Volume	The quantity of liquid used to rinse the inside of the probe.	250 uL
Inside Flow Rate	The speed at which the Inside Volume moves out of the probe and into the inside rinse position in the rinse station. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	10 mL/min
Outside Volume	The quantity of liquid used to rinse the outside of the probe.	500 uL
Outside Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	10 mL/min
Inside Rinse Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the tube bottom for rinsing the probe at the inside rinse position in the rinse station.	0 mm
Outside Rinse Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the tube bottom for rinsing the probe at the outside rinse position in the rinse station.	0 mm

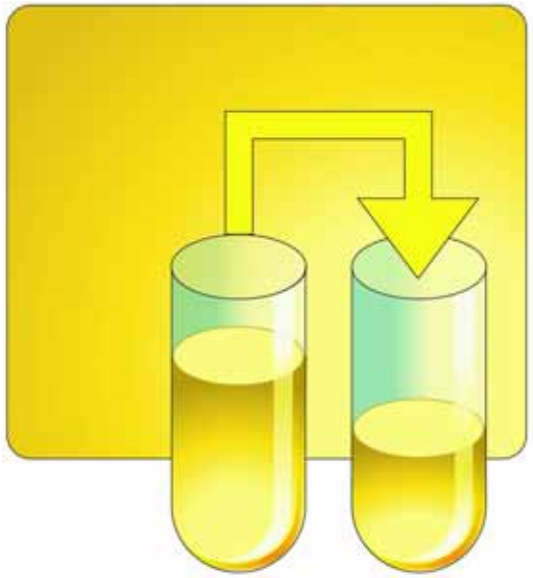
Transfer - Advanced/Rinsing Table *(Page 2 of 2)*

Transfer - Instruments

Property Name	*Brief Description*	*Default Value*
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump or VPS that the task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	

Transfer - Instruments

Transfer - Sequence of Steps



The following is an overview for the sequence of steps.

1 **Aspirate** on page A-113
2 **Dispense** on page A-114
3 **Inside Rinse** on page A-115
4 **Outside Rinse** on page A-115

ASPIRATE

Reservoir

1 Move Z to Z Safe Height

Tray

1 Move Z to Z Safe Height
2 Aspirate Source Air Gap at Air Gap Flow Rate
3 Move probe to Source Well in Source Zone

4 Lower probe into well to Source Height
5 Aspirate Source Volume + Extra Volume at Source Flow Rate using Liquid Level Following, if selected
6 Move Z to Z Safe Height

Transfer Port

1 Move Z to Z Safe Height
2 Aspirate Source Air Gap at Air Gap Flow Rate
3 Move probe to well in Source Zone
4 Lower probe into well to Source Height
5 Set Transfer Port to On
6 Aspirate Source Volume + Extra Volume at Source Flow Rate
7 Set Transfer Port to Off
8 Move Z to Z Safe Height

DISPENSE

Reservoir

1 Move probe to Result Well in Result Zone
2 Lower probe into well to Result Height
3 Aspirate Source Volume (from Reservoir) at Source Flow Rate
4 Dispense Source Volume at Result Flow Rate using Liquid Level Following is selected
   - If Source Volume is greater than syringe capacity repeat steps 3–4 until Source Volume is delivered
5 Wait Equilibration Time
6 Perform a Touch Off (X direction), if selected and move Z to Z Safe Height

Tray or Transfer Port

1 Move probe to Result Well in Result Zone
2 Lower probe into well to Result Height
3 Dispense Source Volume at Result Flow Rate using Liquid Level Following is selected
4 Wait Equilibration Time
5 Perform a Touch Off (X direction), if selected and move Z to Z Safe Height
   - If Source Volume is greater than syringe capacity, repeat aspirate and dispense (Air Gap + Extra Volume are not aspirated) until Source Volume is delivered
6 Move probe to well in Inside Rinse Zone
7 Lower probe into well to Inside Rinse Height
8 Dispense Extra Volume + Source Air Gap at Result Flow Rate

INSIDE RINSE

1 Move Z to Z Safe Height
2 Move probe to well in Inside Rinse Zone
3 Lower probe into well to Inside Rinse Height
4 Aspirate Inside Volume (from Reservoir) at Inside Rinse Flow Rate
5 Dispense Inside Volume at Inside Rinse Flow Rate
6 Repeat steps 4–5 until Inside Volume delivered
7 Move Z to Z Safe Height

OUTSIDE RINSE

1 Move Z to Z Safe Height
2 Move probe into well in Outside Rinse Zone

3 Lower probe into well to Outside Rinse Height
4 Aspirate Outside Rinse Volume (from Reservoir) at Outside Rinse Flow Rate
5 Dispense Outside Rinse Volume at Outside Rinse Flow Rate.
6 Repeat steps 4–5 until Outside Rinse Volume delivered
7 Move Z to Z Safe Height

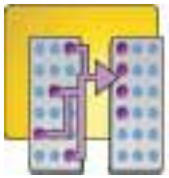
Tasks - SS Liquid Handling

B

Gilson supplies SS Liquid Handling tasks for use on the following instruments: GX-271 Liquid Handler (with Solvent System) and GX-281 Liquid Handler (with Solvent System).

SS Liquid Handling

SS Liquid Handling Tasks

	Gilson Task Name and Description
	SS Add This task dispenses the specified volumes of liquid source (from the reservoir or tray) and solution (from the tray) to the wells of the result zone.
	SS Aliquot This task dispenses the liquid (source) from the reservoir or tray equally to each of the wells of the result zone. This task should be used in Batch mode only.
	SS Cherry Pick This task transfers liquid (source) from wells in the source zone to a sequence of wells (beginning with the starting well) in the result zone.
	SS Derivatize This task dispenses the specified volumes of liquid source (from the reservoir or tray) and solution (from the tray) to the wells of the result zone and then mixes with liquid or air.

SS Liquid Handling Tasks Table *(Page 1 of 3)*

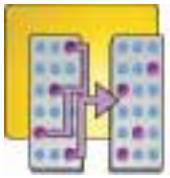
SS Liquid Handling Tasks (Continued)

SS Dilute

This task dispenses the specified volumes of liquid (source) from the tray and another liquid (diluent) from the reservoir or tray to the wells of the result zone.

SS Dispense

This task dispenses the specified volume of liquid (source) from the reservoir or tray to the wells of the result zone.



SS Dispense Random to Random

This task transfers liquid (source) from wells in the source zone to random wells in the result zone.

SS Inject

This task aspirates the specified volume of liquid (source), switches the injection valve to LOAD, dispenses the volume to the wells of the injection zone, and then switches the injection valve to INJECT.

SS Mix

This task aspirates air or liquid and then dispenses it into a well a specified number of times.

SS Liquid Handling Tasks Table *(Page 2 of 3)*

SS Liquid Handling Tasks (Continued)

SS Prime Pump

This task primes the transfer tubing with reservoir solvent in the result zone.

SS Rinse Probes

This task rinses the inside and outside of the probe using liquid from the pump reservoir.

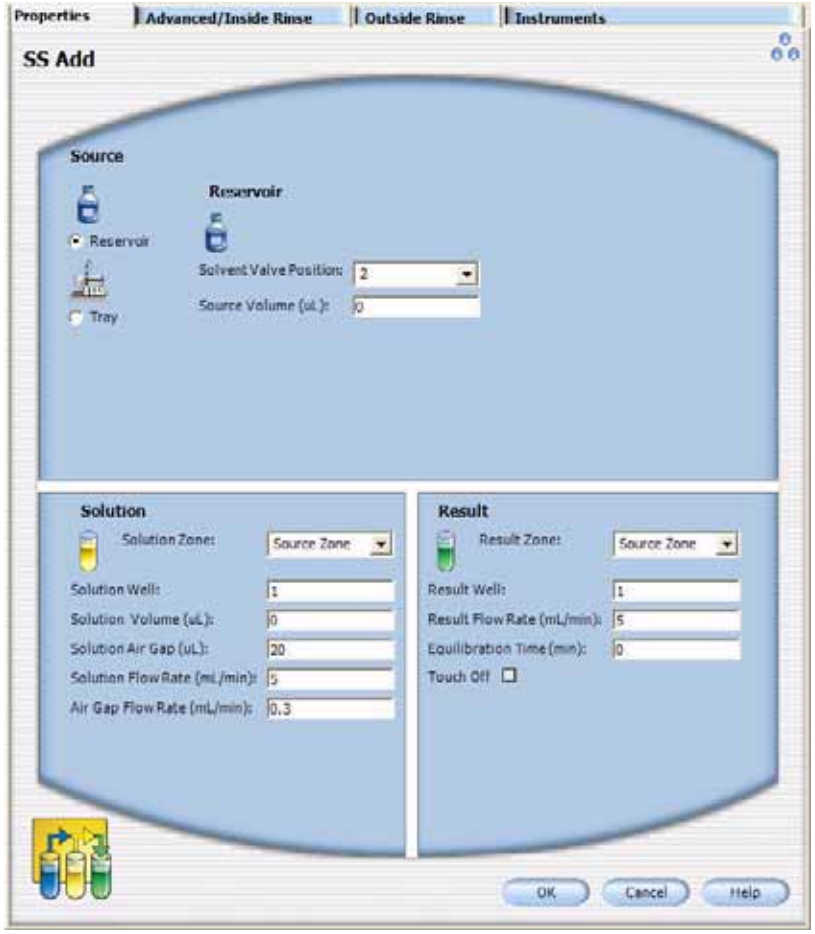
SS Transfer

This task dispenses the specified volume of liquid (source) from the reservoir or tray to the wells of the result zone.

SS Liquid Handling Tasks Table *(Page 3 of 3)*

SS Add

This task dispenses the specified volumes of liquid source (from the reservoir or tray) and solution (from the tray) to the wells of the result zone.



For more information about the properties on each tab, see:

SS Add - Properties on page B-6

SS Add - Advanced/Inside Rinse on page B-9

SS Add - Outside Rinse on page B-12

SS Add - Instruments on page B-15

SS Add - Sequence of Steps on page B-16

SS Add - Properties

Property Name	*Brief Description*	*Default Value*
Source	Select Reservoir or Tray.	Reservoir
Reservoir Solvent Valve Position	Desired position (1 through 6) of the solvent valve on the GX Solvent System. The position designated for waste cannot be used.	2
Reservoir Source Volume	The quantity of a sample.	0 uL
Tray Source Zone	The zone from which the Source Volume is drawn.	
Tray Source Well	The well in the Source Zone from which the Source Volume is drawn.	1
Tray Solvent Valve Position	Desired position (1 through 6) of the solvent valve on the GX Solvent System. The position designated for waste cannot be used.	2
Tray Source Volume	The quantity of a sample.	0 uL
Tray Extra Volume	An additional volume to the Solution Volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/reservoir solvent and the Source Volume.	0 uL

SS Add - Properties Table *(Page 1 of 3)*

SS Add - Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Tray Source Air Gap	The quantity of the air gap aspirated before the Source Volume.	20 uL
Tray Source Flow Rate	The speed at which the Source Volume and Extra Volume move into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	5 mL/min
Tray Air Gap Flow Rate	The speed at which the Source Air Gap moves into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	0.3 mL/min
Solution Zone	The zone from which the Solution Volume is drawn.	
Solution Well	The well in the Solution Zone from which the Solution Volume is drawn.	1
Solution Volume	The quantity of solution.	0 uL
Solution Air Gap	The quantity of the air gap aspirated before the Solution Volume.	20 uL
Solution Flow Rate	The speed at which the Solution Volume moves into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	5 mL/min
Air Gap Flow Rate	The speed at which the Solution Air Gap moves into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	0.3 mL/min
Result Zone	The zone to which the Source and Solution Volumes are delivered.	

SS Add - Properties Table *(Page 2 of 3)*

SS Add - Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Result Well	The well in the Result Zone to which the Source and Solution Volumes are delivered.	1
Result Flow Rate	The speed at which the Source and Solution Volumes move out of the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	5 mL/min
Equilibration Time	Time the program waits after each dispense before moving out of the well.	0 min
Touch Off	Select Touch Off to move to the edge of the well after dispensing (in the X direction).	

SS Add - Properties Table *(Page 3 of 3)*

SS Add - Advanced/Inside Rinse

Property Name	*Brief Description*	*Default Value*
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated and up while it is dispensed. This selection changes the reference point for the Source Height, Solution Height, and Result Height to the liquid surface. Initial Volumes should be set in the Sample List when using this option.	
Liquid Level Detection	When selected, the probe will stop when the instrument detects the liquid surface. This selection changes the reference point for the Source Height, Solution Height, and Result Height to the height at which the liquid was detected. **Note:** If no liquid is detected, the probe will go to the bottom of the tube. This option can only be used on instruments which support Liquid Level Detection.	
Sensitivity	Sensitivity is a percent (0–100%) used to detect liquid when Liquid Level Detection is used. A low setting is the most sensitive and higher settings are less sensitive.	1
Source Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from a defined reference point (Tube Bottom unless Liquid Level Detection or Liquid Level Following is selected) when aspirating the Source Volume.	2 mm
Solution Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from a defined reference point (Tube Bottom unless Liquid Level Detection or Liquid Level Following is selected) when aspirating the Solution Volume.	2 mm

SS Add - Advanced/Inside Rinse Table *(Page 1 of 3)*

SS Add - Advanced/Inside Rinse (Continued)

Property Name	*Brief Description*	*Default Value*
Result Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the defined reference point (Tube Bottom unless Liquid Level Detection or Liquid Level Following is selected) when delivering to the Result Zone.	2 mm
Inside Rinse Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the Inside Rinse at the rinse station. The position designated for waste cannot be used.	2
Inside Rinse Zone	The zone to which the Inside Rinse Volume is delivered.	Inside Rinse
Inside Rinse Well	The well in the Inside Rinse Zone to which the Inside Rinse Volume is delivered.	1
Inside Rinse Volume	The quantity of liquid used to rinse the inside of the probe.	1000 uL
Inside Rinse Flow Rate	The speed at which the Inside Rinse Volume moves out of the probe and into the inside rinse position in the rinse station.	10 mL/min

SS Add - Advanced/Inside Rinse Table *(Page 2 of 3)*

SS Add - Advanced/Inside Rinse (Continued)

Property Name	*Brief Description*	*Default Value*
Inside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the inside rinse: **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) and negative (-) value for the Inside Rinse Z Offset. **Top:** Moves probe to the Z Safe Height; accepts only a negative (-) value for the Inside Rinse Z Offset. **Tube Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Inside Rinse Z Offset values to move up from the bottom. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Inside Rinse Z Offset. **Z Adjust:** Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Inside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Inside Rinse Z Option for rinsing the probe at the inside rinse position in the rinse station.	0 mm

SS Add - Advanced/Inside Rinse Table *(Page 3 of 3)*

SS Add - Outside Rinse

Property Name	*Brief Description*	*Default Value*
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	2000 uL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	10 mL/min

SS Add - Outside Rinse Table *(Page 1 of 4)*

SS Add - Outside Rinse (Continued)

Property Name	*Brief Description*	*Default Value*
Outside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the outside rinse: **Absolute Value:** Moves the probe to the Z-value entered; if 0 is entered for the Outside Rinse Z Offset, the probe will move to the bed bottom (no safety factor incorporated). **Auto Calculate:** Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) and negative (-) value for the Outside Rinse Z Offset. **Top:** Moves probe to the Z Safe Height; accepts only a negative (-) value for the Outside Rinse Z Offset. **Tube Bottom:** Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. **Tube Top:** Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. **Z Adjust:** Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option rinsing the probe at the outside rinse position in the rinse station.	0 mm

SS Add - Outside Rinse Table *(Page 2 of 4)*

SS Add - Outside Rinse (Continued)

Property Name	*Brief Description*	*Default Value*
Peristaltic Rinse Pump	The rinse pump that will be used for the flowing outside rinse. Select 1 if the rinse pump is wired to Output 1 and 24V Output 1 or select 2 if the rinse pump is wired to Output 2 and 24V Output 2.	1
Rinse Pump Speed	Select High, Low, or Off.	OFF
Number of Rinse Stations	Select the number of rinse stations to be used when performing the outside rinse. Valid range 1–5.	1
Rinse Well 1 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 1. Valid range 1–6. The position designated for waste cannot be used.	2
Rinse Well 2 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 2. Valid range 1–6. The position designated for waste cannot be used.	2
Rinse Well 3 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 3. Valid range 1–6. The position designated for waste cannot be used.	2

SS Add - Outside Rinse Table *(Page 3 of 4)*

SS Add - Outside Rinse (Continued)

Property Name	*Brief Description*	*Default Value*
Rinse Well 4 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 4. Valid range 1–6. The position designated for waste cannot be used.	2
Rinse Well 5 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 5. Valid range 1–6. The position designated for waste cannot be used.	2

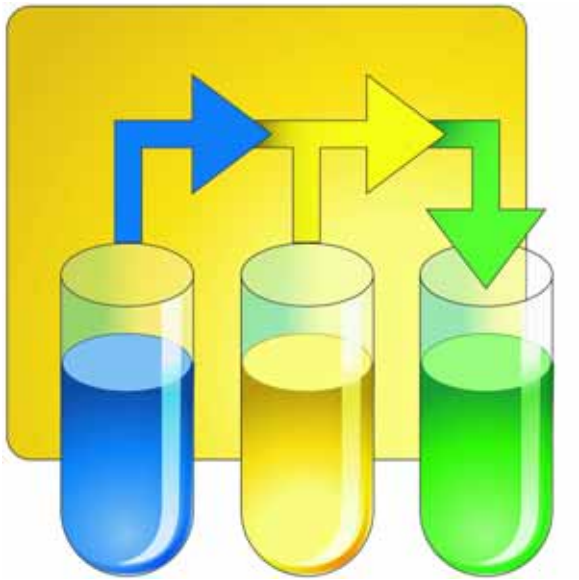
SS Add - Outside Rinse Table *(Page 4 of 4)*

SS Add - Instruments

Property Name	*Brief Description*	*Default Value*
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump or VPS that the task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	

SS Add - Instruments

SS Add - Sequence of Steps



The following is an overview for the sequence of steps.

1 **Aspirate** on page B-16
2 **Dispense** on page B-17
3 **Inside Rinse** on page B-18
4 **Outside Rinse** on page B-18

ASPIRATE

Reservoir

1 Move Z to Z Safe Height
2 Move probe to Solution Well in Solution Zone
3 Aspirate Solution Air Gap at Air Gap Flow Rate
4 Lower probe into well to Solution Height
5 Aspirate Solution Volume at Solution Flow Rate using Liquid Level Following, if selected
6 Move Z to Z Safe Height

Tray

1 Move Z to Z Safe Height
2 Move probe to Source Well in Source Zone
3 Aspirate Source Air Gap at Air Gap Flow Rate
4 Lower probe into well to Source Height
5 Aspirate Source Volume + Extra Volume at Source Flow Rate using Liquid Level Following, if selected

6 Move Z to Z Safe Height
7 Move probe to Solution Well in Solution Zone
8 Aspirate Solution Air Gap at Air Gap Flow Rate
9 Lower probe into well to Solution Height
10 Aspirate Solution Volume at Solution Flow Rate using Liquid Level Following, if selected
11 Move Z to Z Safe Height

DISPENSE

Reservoir

1 Move to Result Well in Result Zone
2 Lower probe into well to Result Height
3 Switch solvent valve to Solvent Valve Position
4 Dispense Source Volume + Solution Volume + Solution Air Gap at Result Flow Rate using Liquid Level Following, if selected.
5 Wait Equilibration Time
6 Perform a Touch Off (X-direction), if selected and move Z to Z Safe Height

Tray

1 Move to Result Well in Result Zone
2 Lower probe into well to Result Height
3 Switch solvent valve to Solvent Valve Position
4 Dispense Source Volume + Solution Volume + Solution Air Gap at Result Flow Rate using Liquid Level Following, if selected

5 Wait Equilibration Time
6 Perform a Touch Off (X-direction), if selected and move Z to Z Safe Height
7 Move probe to Inside Rinse Well in Inside Rinse Zone
8 Lower probe to Inside Rinse Z Offset and Inside Rinse Z Option
9 Dispense Extra Volume + Source Air Gap at Result Flow Rate using Solvent Valve at Solvent Valve Position selected

INSIDE RINSE

1 Move Z to Z Safe Height
2 Move probe to Inside Rinse Well in Inside Rinse Zone
3 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset
4 Switch solvent valve to Inside Rinse Solvent Valve Position
5 Dispense Inside Rinse Volume at Inside Rinse Flow Rate
   - If the Inside Rinse Solvent Valve Position is not the same as the Solvent Valve Position, dispense Inside Rinse Volume + 2000 uL + Transfer Tubing volume
6 Move Z to Z Safe Height

OUTSIDE RINSE

1 Move probe to first well in Outside Rinse Zone
2 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset
3 Switch Peristaltic Rinse Pump on at Rinse Pump Speed
4 Switch solvent valve to Rinse Well 1 Solvent Valve Position
5 Dispense Outside Rinse Volume at Outside Rinse Flow Rate.
   - If the current solvent valve position is not the same as the previous solvent valve position, dispense Outside Rinse Volume + 2000 uL + Transfer Tubing volume

6 Switch Peristaltic Rinse Pump off

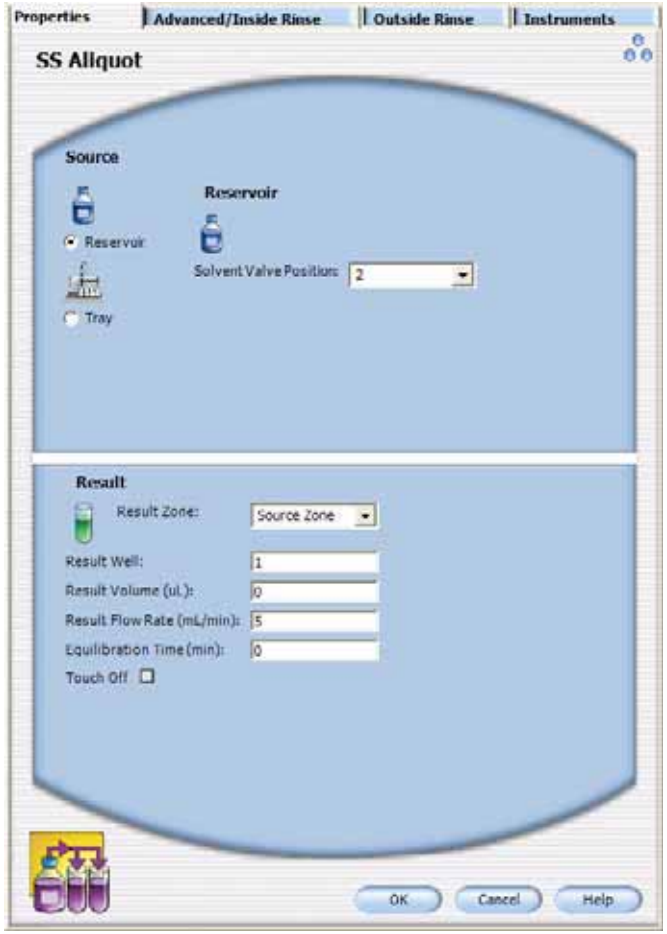
7 Move Z to Z Safe Height

8 Repeat steps 1–5 for the Number of Rinse Stations, incrementing the Outside Rinse well for each rinse station

SS Aliquot

This task dispenses the liquid (source) from the reservoir or tray equally to each of the wells of the result zone.

This task should be used in Batch mode only.



For more information about the properties on each tab, see:

SS Aliquot - Properties on page B-21

SS Aliquot - Advanced/Inside Rinse on page B-23

SS Aliquot - Outside Rinse on page B-26

SS Aliquot - Instruments on page B-29

SS Aliquot - Sequence of Steps on page B-30

SS Aliquot - Properties

Property Name	*Brief Description*	*Default Value*
Source	Select Reservoir or Tray.	Reservoir
Reservoir Solvent Valve Position	Desired position (1 through 6) of the solvent valve on the GX Solvent System. The position designated for waste cannot be used.	2
Tray Source Zone	The zone from which the Result Volume is drawn.	
Tray Source Well	The well in the Source Zone from which the Result Volume is drawn.	1
Tray Solvent Valve Position	Desired position (1 through 6) of the solvent valve on the GX Solvent System. The position designated for waste cannot be used.	2
Tray Extra Volume	An additional volume to the Result Volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/reservoir solvent and the Result Volume.	0 uL
Tray Source Air Gap	The quantity of the air gap aspirated before the Result Volume.	20 uL
Tray Source Flow Rate	The speed at which the Result Volume and Extra Volume move into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	5 mL/min

SS Aliquot - Properties Table *(Page 1 of 2)*

SS Aliquot - Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Tray Air Gap Flow Rate	The speed at which the Source Air Gap moves into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	0.3 mL/min
Result Zone	The zone to which the Result Volume is delivered.	
Result Well	The well in the Result Zone to which the Result Volume is delivered.	1
Result Volume	The quantity of liquid delivered to the Result Well in the Result Zone.	0 uL
Result Flow Rate	The speed at which the Result Volume moves out of the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	5 mL/min
Equilibration Time	Time the program waits after each dispense before moving out of the well.	0 min
Touch Off	Select Touch Off to move to the edge of the well after dispensing (in the X direction).	

SS Aliquot - Properties Table *(Page 2 of 2)*

SS Aliquot - Advanced/Inside Rinse

Property Name	*Brief Description*	*Default Value*
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated and up while it is dispensed. This selection changes the reference point for the Source Height and Result Height to the liquid surface. Initial Volumes should be set in the Sample List when using this option.	
Liquid Level Detection	When selected, the probe will stop when the instrument detects the liquid surface. This selection changes the reference point for the Source Height and Result Height to the height at which the liquid was detected. **Note:** If no liquid is detected, the probe will go to the bottom of the tube. This option can only be used on instruments which support Liquid Level Detection.	
Sensitivity	Sensitivity is a percent (0–100%) used to detect liquid when Liquid Level Detection is used. A low setting is the most sensitive and higher settings are less sensitive.	1
Source Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from a defined reference point (Tube Bottom unless Liquid Level Detection or Liquid Level Following is selected) when aspirating the Result Volume.	2 mm
Result Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the defined reference point (Tube Bottom unless Liquid Level Detection or Liquid Level Following is selected) when delivering to the Result Zone.	2 mm

SS Aliquot - Advanced/Inside Rinse Table *(Page 1 of 3)*

SS Aliquot - Advanced/Inside Rinse (Continued)

Property Name	*Brief Description*	*Default Value*
Inside Rinse Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the Inside Rinse at the rinse station. The position designated for waste cannot be used.	2
Inside Rinse Zone	The zone to which the Inside Rinse Volume is delivered.	Inside Rinse
Inside Rinse Well	The well in the Inside Rinse Zone to which the Inside Rinse Volume is delivered.	1
Inside Rinse Volume	The quantity of liquid used to rinse the inside of the probe.	1000 uL
Inside Rinse Flow Rate	The speed at which the Inside Rinse Volume moves out of the probe and into the inside rinse position in the rinse station.	10 mL/min

SS Aliquot - Advanced/Inside Rinse Table *(Page 2 of 3)*

SS Aliquot - Advanced/Inside Rinse (Continued)

Property Name	*Brief Description*	*Default Value*
Inside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the inside rinse: **Absolute Value**: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). **Auto Calculate**: Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) and negative (-) value for the Inside Rinse Z Offset. **Top**: Moves probe to the Z Safe Height; accepts only a negative (-) value for the Inside Rinse Z Offset. **Tube Bottom**: Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Inside Rinse Z Offset values to move up from the bottom. **Tube Top**: Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Inside Rinse Z Offset. **Z Adjust**: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Inside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Inside Rinse Z Option for rinsing the probe at the inside rinse position in the rinse station.	0 mm

SS Aliquot - Advanced/Inside Rinse Table *(Page 3 of 3)*

SS Aliquot - Outside Rinse

Property Name	*Brief Description*	*Default Value*
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	2000 uL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	10 mL/min

SS Aliquot - Outside Rinse Table *(Page 1 of 4)*

SS Aliquot - Outside Rinse (Continued)

Property Name	*Brief Description*	*Default Value*
Outside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the outside rinse: **Absolute Value**: Moves the probe to the Z-value entered; if 0 is entered for the Outside Rinse Z Offset, the probe will move to the bed bottom (no safety factor incorporated). **Auto Calculate**: Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) and negative (-) value for the Outside Rinse Z Offset. **Top**: Moves probe to the Z Safe Height; accepts only a negative (-) value for the Outside Rinse Z Offset. **Tube Bottom**: Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. **Tube Top**: Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. **Z Adjust**: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option rinsing the probe at the outside rinse position in the rinse station.	0 mm

SS Aliquot - Outside Rinse Table *(Page 2 of 4)*

SS Aliquot - Outside Rinse (Continued)

Property Name	*Brief Description*	*Default Value*
Peristaltic Rinse Pump	The rinse pump that will be used for the flowing outside rinse. Select 1 if the rinse pump is wired to Output 1 and 24V Output 1 or select 2 if the rinse pump is wired to Output 2 and 24V Output 2.	1
Rinse Pump Speed	Select High, Low, or Off.	OFF
Number of Rinse Stations	Select the number of rinse stations to be used when performing the outside rinse. Valid range 1–5.	1
Rinse Well 1 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 1. Valid range 1–6. The position designated for waste cannot be used.	2
Rinse Well 2 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 2. Valid range 1–6. The position designated for waste cannot be used.	2
Rinse Well 3 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 3. Valid range 1–6. The position designated for waste cannot be used.	2

SS Aliquot - Outside Rinse Table *(Page 3 of 4)*

SS Aliquot - Outside Rinse (Continued)

Property Name	*Brief Description*	*Default Value*
Rinse Well 4 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 4. Valid range 1–6. The position designated for waste cannot be used.	2
Rinse Well 5 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 5. Valid range 1–6. The position designated for waste cannot be used.	2

SS Aliquot - Outside Rinse Table *(Page 4 of 4)*

SS Aliquot - Instruments

Property Name	*Brief Description*	*Default Value*
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump or VPS that the task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	

SS Aliquot - Instruments

SS Aliquot - Sequence of Steps

The following is an overview for the sequence of steps.

1 **Aspirate** on page B-30
2 **Dispense** on page B-31
3 **Inside Rinse** on page B-32
4 **Outside Rinse** on page B-32

ASPIRATE

Reservoir

1 Move Z to Z Safe Height

Tray

1 Move Z to Z Safe Height
2 Aspirate Source Air Gap at Air Gap Flow Rate
3 Move probe to Source Well in Source Zone
4 Lower probe into well to Source Height
5 Aspirate Aliquot Volume (Result Volume x number of dispenses + Extra Volume) at Source Flow Rate using Liquid Level Following, if selected.
   - If volume is greater than the transfer tubing, aspirate as much volume as the transfer tubing will hold.
6 Move Z to Z Safe Height.

DISPENSE

Reservoir

1 Move to Result Well in Result Zone
2 Lower probe into well to Result Height
3 Switch solvent valve to Solvent Valve Position
4 Dispense Result Volume at Result Flow Rate using Liquid Level Following, if selected
5 Wait Equilibration Time
6 Perform a Touch Off (X direction), if selected and move Z to Z Safe Height
7 Repeat steps 1–6 of DISPENSE for subsequent result wells.

Tray

1 Move to Result Well in Result Zone
2 Lower probe into well to Result Height
3 Switch solvent valve to Solvent Valve Position
4 Dispense Result Volume at Result Flow Rate using Liquid Level Following, if selected
5 Wait Equilibration Time
6 Perform a Touch Off (X direction), if selected and move Z to Z Safe Height
7 Repeat steps 1-5 of DISPENSE for subsequent result wells. If source from Tray, return to Source Zone to aspirate more source, if necessary
8 Move probe to Inside Rinse Well in Inside Rinse Zone
9 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset
10 Dispense Extra Volume + Source Air Gap at Result Flow Rate

INSIDE RINSE

1 Move Z to Z Safe Height
2 Move probe to Inside Rinse Well in Inside Rinse Zone
3 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset
4 Switch solvent valve to Inside Rinse Solvent Valve Position
5 Dispense Inside Rinse Volume at Inside Rinse Flow Rate
   - If the Inside Rinse Solvent Valve Position is not the same as the Solvent Valve Position, dispense Inside Rinse Volume + 2000 uL + Transfer Tubing volume
6 Move Z to Z Safe Height

OUTSIDE RINSE

1 Move probe to first well in Outside Rinse Zone
2 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset
3 Switch Peristaltic Rinse Pump on at Rinse Pump Speed
4 Switch solvent valve to Rinse Well 1 Solvent Valve Position
5 Dispense Outside Rinse Volume at Outside Rinse Flow Rate.
   - If the current solvent valve position is not the same as the previous solvent valve position, dispense Outside Rinse Volume + 2000 uL + Transfer Tubing volume
6 Switch Peristaltic Rinse Pump off
7 Move Z to Z Safe Height
8 Repeat steps 1–5 for the Number of Rinse Stations, incrementing the Outside Rinse well for each rinse station

SS Cherry Pick

This task transfers liquid (source) from wells in the source zone to a sequence of wells (beginning with the starting well) in the result zone.

For more information about the properties on each tab, see:

SS Cherry Pick - Properties on page B-34

SS Cherry Pick - Advanced/Inside Rinse on page B-35

SS Cherry Pick - Outside Rinse on page B-38

SS Cherry Pick - Instruments on page B-41

SS Cherry Pick - Sequence of Steps on page B-42

SS Cherry Pick - Properties

Property Name	*Brief Description*	*Default Value*
Source Zone	The zone from which the Source Volume is drawn.	
Source Well	The well in the Source Zone from which the Source Volume is drawn.	1
Solvent Valve Position	Desired position (1 through 6) of the solvent valve on the GX Solvent System. The position designated for waste cannot be used.	2
Source Volume	The quantity of a sample.	0 uL
Extra Volume	An additional volume to the Source Volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/reservoir solvent and the Source Volume.	0 uL
Source Air Gap	The quantity of the air gap aspirated before the Source Volume.	20 uL
Source Flow Rate	The speed at which the Source Volume and Extra Volume move into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	5 mL/min
Air Gap Flow Rate	The speed at which the Source Air Gap moves into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	0.3 mL/min
Result Zone	The zone to which the Source Volume is delivered.	
Starting Well	The well in the Result Zone to which to start dispensing the source volume. Enter #x where x is the name defined in the Sample List.	1
Result Flow Rate	The speed at which the Source Volume moves out of the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	5 mL/min

SS Cherry Pick - Properties Table *(Page 1 of 2)*

SS Cherry Pick - Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Equilibration Time	Time the program waits after each dispense before moving out of the well.	0 min
Touch Off	Select Touch Off to move to the edge of the well after dispensing (in the X direction).	

SS Cherry Pick - Properties Table *(Page 2 of 2)*

SS Cherry Pick - Advanced/Inside Rinse

Property Name	*Brief Description*	*Default Value*
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated and up while it is dispensed. This selection changes the reference point for the Source Height and Result Height to the liquid surface. Initial Volumes should be set in the Sample List when using this option.	
Liquid Level Detection	When selected, the probe will stop when the instrument detects the liquid surface. This selection changes the reference point for the Source Height and Result Height to the height at which the liquid was detected. **Note:** If no liquid is detected, the probe will go to the bottom of the tube. This option can only be used on instruments which support Liquid Level Detection.	
Sensitivity	Sensitivity is a percent (0–100%) used to detect liquid when Liquid Level Detection is used. A low setting is the most sensitive and higher settings are less sensitive.	1

SS Cherry Pick - Advanced/Inside Rinse Table *(Page 1 of 3)*

SS Cherry Pick - Advanced/Inside Rinse (Continued)

Property Name	*Brief Description*	*Default Value*
Source Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from a defined reference point (Tube Bottom unless Liquid Level Detection or Liquid Level Following is selected) when aspirating the Source Volume.	2 mm
Result Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the defined reference point (Tube Bottom unless Liquid Level Detection or Liquid Level Following is selected) when delivering to the Result Zone.	2 mm
Inside Rinse Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the Inside Rinse at the rinse station. The position designated for waste cannot be used.	2
Inside Rinse Zone	The zone to which the Inside Rinse Volume is delivered.	Inside Rinse
Inside Rinse Well	The well in the Inside Rinse Zone to which the Inside Rinse Volume is delivered.	1
Inside Rinse Volume	The quantity of liquid used to rinse the inside of the probe.	1000 uL
Inside Rinse Flow Rate	The speed at which the Inside Rinse Volume moves out of the probe and into the inside rinse position in the rinse station.	10 mL/min

SS Cherry Pick - Advanced/Inside Rinse Table *(Page 2 of 3)*

SS Cherry Pick - Advanced/Inside Rinse (Continued)

Property Name	*Brief Description*	*Default Value*
Inside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the inside rinse: **Absolute Value**: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). **Auto Calculate**: Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) and negative (-) value for the Inside Rinse Z Offset. **Top**: Moves probe to the Z Safe Height; accepts only a negative (-) value for the Inside Rinse Z Offset. **Tube Bottom**: Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Inside Rinse Z Offset values to move up from the bottom. **Tube Top**: Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Inside Rinse Z Offset. **Z Adjust**: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Inside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Inside Rinse Z Option for rinsing the probe at the inside rinse position in the rinse station.	0 mm

SS Cherry Pick - Advanced/Inside Rinse Table *(Page 3 of 3)*

SS Cherry Pick - Outside Rinse

Property Name	*Brief Description*	*Default Value*
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	2000 uL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	10 mL/min

SS Cherry Pick - Outside Rinse Table *(Page 1 of 4)*

SS Cherry Pick - Outside Rinse (Continued)

Property Name	*Brief Description*	*Default Value*
Outside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the outside rinse: **Absolute Value**: Moves the probe to the Z-value entered; if 0 is entered for the Outside Rinse Z Offset, the probe will move to the bed bottom (no safety factor incorporated). **Auto Calculate**: Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) and negative (-) value for the Outside Rinse Z Offset. **Top**: Moves probe to the Z Safe Height; accepts only a negative (-) value for the Outside Rinse Z Offset. **Tube Bottom**: Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. **Tube Top**: Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. **Z Adjust**: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option rinsing the probe at the outside rinse position in the rinse station.	0 mm

SS Cherry Pick - Outside Rinse Table *(Page 2 of 4)*

SS Cherry Pick - Outside Rinse (Continued)

Property Name	*Brief Description*	*Default Value*
Peristaltic Rinse Pump	The rinse pump that will be used for the flowing outside rinse. Select 1 if the rinse pump is wired to Output 1 and 24V Output 1 or select 2 if the rinse pump is wired to Output 2 and 24V Output 2.	1
Rinse Pump Speed	Select High, Low, or Off.	OFF
Number of Rinse Stations	Select the number of rinse stations to be used when performing the outside rinse. Valid range 1–5.	1
Rinse Well 1 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 1. Valid range 1–6. The position designated for waste cannot be used.	2
Rinse Well 2 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 2. Valid range 1–6. The position designated for waste cannot be used.	2
Rinse Well 3 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 3. Valid range 1–6. The position designated for waste cannot be used.	2

SS Cherry Pick - Outside Rinse Table *(Page 3 of 4)*

SS Cherry Pick - Outside Rinse (Continued)

Property Name	*Brief Description*	*Default Value*
Rinse Well 4 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 4. Valid range 1–6. The position designated for waste cannot be used.	2
Rinse Well 5 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 5. Valid range 1–6. The position designated for waste cannot be used.	2

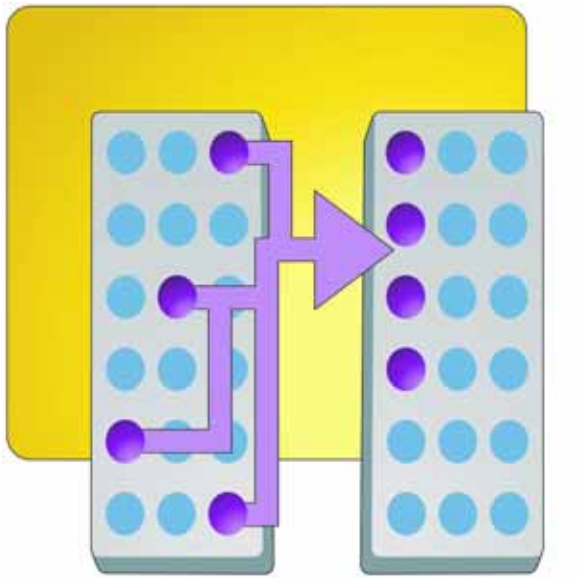
SS Cherry Pick - Outside Rinse Table *(Page 4 of 4)*

SS Cherry Pick - Instruments

Property Name	*Brief Description*	*Default Value*
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump or VPS that the task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	

SS Cherry Pick - Outside Rinse

SS Cherry Pick - Sequence of Steps



The following is an overview for the sequence of steps.

1 **Aspirate** on page B-42
2 **Dispense** on page B-42
3 **Inside Rinse** on page B-43
4 **Outside Rinse** on page B-43

ASPIRATE

1 Move Z to Z Safe Height
2 Aspirate Source Air Gap at Air Gap Flow Rate
3 Move to Source Well in Source Zone
4 Lower probe into well to Source Height
5 Aspirate Source Volume + Extra Volume at Source Flow Rate using Liquid Level Following, if selected.
6 Move Z to Z Safe Height

DISPENSE

1 Move probe to starting well in Result Zone.

Note: Well is automatically incremented for subsequent result wells when a variable is used for Result Well.

2 Lower probe into well to Result Height
3 Switch solvent valve to Solvent Valve Position
4 Dispense Source Volume at the Result Flow Rate using Liquid Level Following, if selected

5 Wait Equilibration Time

6 Perform a Touch Off (X direction), if selected and move Z to Z Safe Height

- If Source Volume is greater than Transfer Tubing volume, repeat aspirate (Air Gap and Extra Volume are not aspirated) and dispense until source volume delivered

7 Move Z to Z Safe Height

8 Move probe to Inside Rinse Well in Inside Rinse Zone

9 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset

10 Dispense Extra Volume + Source Air Gap at the Result Flow Rate

11 Move Z to Z Safe Height

INSIDE RINSE

1 Move Z to Z Safe Height

2 Move probe to Inside Rinse Well in Inside Rinse Zone

3 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset

4 Switch solvent valve to Inside Rinse Solvent Valve Position

5 Dispense Inside Rinse Volume at Inside Rinse Flow Rate

- If the Inside Rinse Solvent Valve Position is not the same as the Solvent Valve Position, dispense Inside Rinse Volume + 2000 uL + Transfer Tubing volume

6 Move Z to Z Safe Height

OUTSIDE RINSE

1 Move probe to first well in Outside Rinse Zone

2 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset

3 Switch Peristaltic Rinse Pump on at Rinse Pump Speed

4 Switch solvent valve to Rinse Well 1 Solvent Valve Position

5 Dispense Outside Rinse Volume at Outside Rinse Flow Rate.

- If the current solvent valve position is not the same as the previous solvent valve position, dispense Outside Rinse Volume + 2000 uL + Transfer Tubing volume

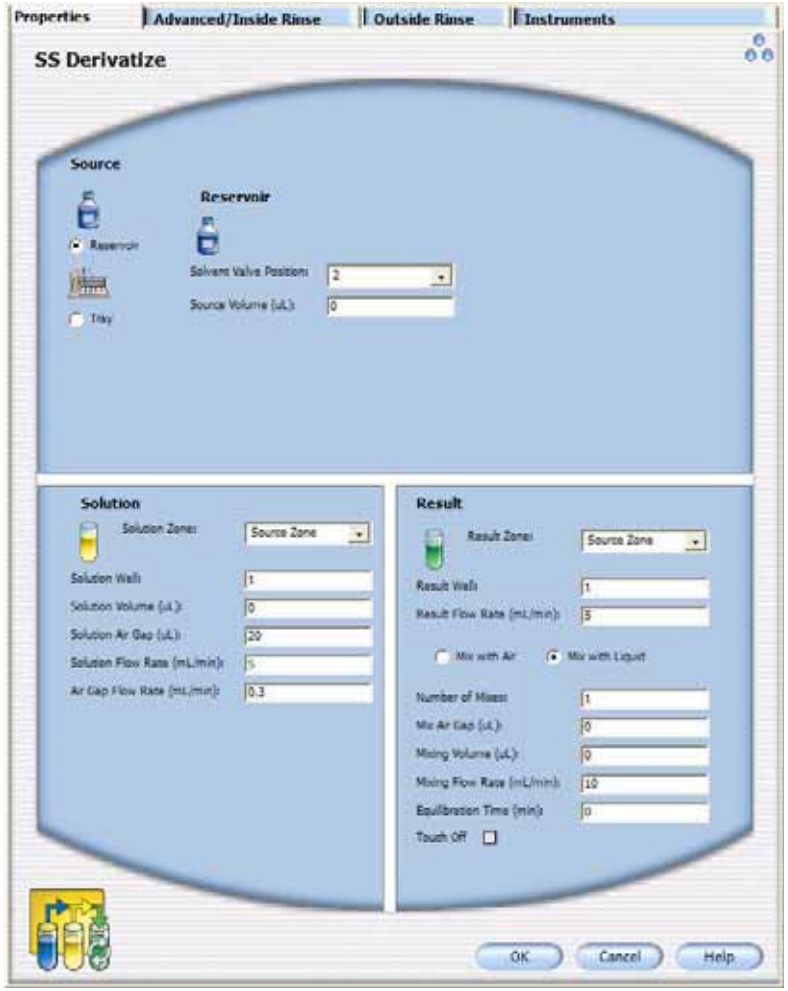
6 Switch Peristaltic Rinse Pump off

7 Move Z to Z Safe Height

8 Repeat steps 1–5 for the Number of Rinse Stations, incrementing the Outside Rinse well for each rinse station

SS Derivatize

This task dispenses the specified volumes of liquid source (from the reservoir or tray) and solution (from the tray) to the wells of the result zone and then mixes with liquid or air.



For more information about the properties on each tab, see:

SS Derivatize - Properties on page B-46

SS Derivatize - Advanced/Inside Rinse on page B-49

SS Derivatize - Outside Rinse on page B-52

SS Derivatize - Instruments on page B-55

SS Derivatize - Sequence of Steps on page B-56

SS Derivatize - Properties

Property Name	*Brief Description*	*Default Value*
Source	Select Reservoir or Tray.	Reservoir
Reservoir Solvent Valve Position	Desired position (1 through 6) of the solvent valve on the GX Solvent System. The position designated for waste cannot be used.	2
Reservoir Source Volume	The quantity of a sample.	0 uL
Tray Source Zone	The zone from which the Source Volume is drawn.	
Tray Solvent Valve Position	Desired position (1 through 6) of the solvent valve on the GX Solvent System. The position designated for waste cannot be used.	2
Tray Source Well	The well in the Source Zone from which the Source Volume is drawn.	1
Tray Source Volume	The quantity of a sample.	0 uL
Tray Extra Volume	An additional volume to the Source Volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/reservoir solvent and the Source Volume.	0 uL

SS Derivatize - Properties Table *(Page 1 of 3)*

SS Derivatize - Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Tray Source Air Gap	The quantity of the air gap aspirated before the Source Volume.	20 uL
Tray Source Flow Rate	The speed at which the Source Volume and Extra Volume move into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	5 mL/min
Tray Air Gap Flow Rate	The speed at which the Source Air Gap moves into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	0.3 mL/min
Solution Zone	The zone from which the Solution Volume is drawn.	
Solution Well	The well in the Solution Zone from which the Solution Volume is drawn.	1
Solution Volume	The quantity of a solution.	0 uL
Solution Air Gap	The quantity of the air gap aspirated before the Solution Volume.	20 uL
Solution Flow Rate	The speed at which the Solution Volume moves into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	5 mL/min
Air Gap Flow Rate	The speed at which the Solution Air Gap moves into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	0.3 mL/min
Result Zone	The zone to which the Source and Solution Volumes are delivered.	

SS Derivatize - Properties Table *(Page 2 of 3)*

SS Derivatize - Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Result Well	The well in the Result Zone to which the Source and Solution Volumes are delivered.	1
Result Flow Rate	The speed at which the Source and Solution Volumes move out of the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	5 mL/min
Mix with Air	Select box to mix with air.	
Mix with Liquid	Select box to mix with liquid.	
Number of Mixes	Number of times the task should repeat the commands related to mixing.	1
Mix Air Gap	The quantity of the air gap aspirated before the Mixing Volume.	20 uL
Mixing Volume	The quantity of air or liquid used as part of a mixing process.	0 uL
Mixing Flow Rate	The speed at which the mixing volume moves into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	10 mL/min
Equilibration Time	Time the program waits after each dispense before moving out of the well.	0 min
Touch Off	Select Touch Off to move to the edge of the well after dispensing (in the X direction).	

SS Derivatize - Properties Table *(Page 3 of 3)*

SS Derivatize - Advanced/Inside Rinse

Property Name	*Brief Description*	*Default Value*
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated and up while it is dispensed. This selection changes the reference point for the Source Height, Solution Height, and Result Height to the liquid surface. Initial Volumes should be set in the Sample List when using this option.	
Liquid Level Detection	When selected, the probe will stop when the instrument detects the liquid surface. This selection changes the reference point for the Source Height, Solution Height, and Result Height to the height at which the liquid was detected. **Note:** If no liquid is detected, the probe will go to the bottom of the tube. This option can only be used on instruments which support Liquid Level Detection.	
Sensitivity	Sensitivity is a percent (0–100%) used to detect liquid when Liquid Level Detection is used. A low setting is the most sensitive and higher settings are less sensitive.	1
Source Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from a defined reference point (Tube Bottom unless Liquid Level Detection or Liquid Level Following is selected) when aspirating the Source Volume.	2 mm
Solution Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from a defined reference point (Tube Bottom unless Liquid Level Detection or Liquid Level Following is selected) when aspirating the Solution Volume.	2 mm

SS Derivatize - Advanced/Inside Rinse Table *(Page 1 of 3)*

SS Derivatize - Advanced/Inside Rinse (Continued)

Property Name	*Brief Description*	*Default Value*
Result Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the defined reference point (Tube Bottom unless Liquid Level Detection or Liquid Level Following is selected) when delivering to the Result Zone and mixing.	2 mm
Inside Rinse Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the Inside Rinse at the rinse station. The position designated for waste cannot be used.	2
Inside Rinse Zone	The zone to which the Inside Rinse Volume is delivered.	Inside Rinse
Inside Rinse Well	The well in the Inside Rinse Zone to which the Inside Rinse Volume is delivered.	1
Inside Rinse Volume	The quantity of liquid used to rinse the inside of the probe.	1000 uL
Inside Rinse Flow Rate	The speed at which the Inside Rinse Volume moves out of the probe and into the inside rinse position in the rinse station.	10 mL/min

SS Derivatize - Advanced/Inside Rinse Table *(Page 2 of 3)*

SS Derivatize - Advanced/Inside Rinse (Continued)

Property Name	*Brief Description*	*Default Value*
Inside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the inside rinse: **Absolute Value**: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). **Auto Calculate**: Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) and negative (-) value for the Inside Rinse Z Offset. **Top**: Moves probe to the Z Safe Height; accepts only a negative (-) value for the Inside Rinse Z Offset. **Tube Bottom**: Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Inside Rinse Z Offset values to move up from the bottom. **Tube Top**: Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Inside Rinse Z Offset. **Z Adjust**: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Inside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Inside Rinse Z Option for rinsing the probe at the inside rinse position in the rinse station.	0 mm

SS Derivatize - Advanced/Inside Rinse Table *(Page 3 of 3)*

SS Derivatize - Outside Rinse

Property Name	*Brief Description*	*Default Value*
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	2000 uL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	10 mL/min

SS Derivatize - Outside Rinse Table *(Page 1 of 4)*

SS Derivatize - Outside Rinse (Continued)

Property Name	*Brief Description*	*Default Value*
Outside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the outside rinse: **Absolute Value**: Moves the probe to the Z-value entered; if 0 is entered for the Outside Rinse Z Offset, the probe will move to the bed bottom (no safety factor incorporated). **Auto Calculate**: Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) and negative (-) value for the Outside Rinse Z Offset. **Top**: Moves probe to the Z Safe Height; accepts only a negative (-) value for the Outside Rinse Z Offset. **Tube Bottom**: Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. **Tube Top**: Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. **Z Adjust**: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option rinsing the probe at the outside rinse position in the rinse station.	0 mm

SS Derivatize - Outside Rinse Table *(Page 2 of 4)*

SS Derivatize - Outside Rinse (Continued)

Property Name	*Brief Description*	*Default Value*
Peristaltic Rinse Pump	The rinse pump that will be used for the flowing outside rinse. Select 1 if the rinse pump is wired to Output 1 and 24V Output 1 or select 2 if the rinse pump is wired to Output 2 and 24V Output 2.	1
Rinse Pump Speed	Select High, Low, or Off.	OFF
Number of Rinse Stations	Select the number of rinse stations to be used when performing the outside rinse. Valid range 1–5.	1
Rinse Well 1 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 1. Valid range 1–6. The position designated for waste cannot be used.	2
Rinse Well 2 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 2. Valid range 1–6. The position designated for waste cannot be used.	2
Rinse Well 3 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 3. Valid range 1–6. The position designated for waste cannot be used.	2

SS Derivatize - Outside Rinse Table *(Page 3 of 4)*

SS Derivatize - Outside Rinse (Continued)

Property Name	*Brief Description*	*Default Value*
Rinse Well 4 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 4. Valid range 1–6. The position designated for waste cannot be used.	2
Rinse Well 5 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 5. Valid range 1–6. The position designated for waste cannot be used.	2

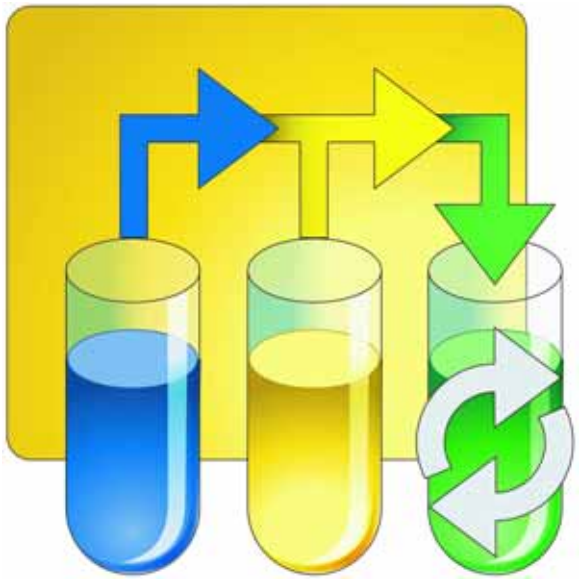
SS Derivatize - Outside Rinse Table *(Page 4 of 4)*

SS Derivatize - Instruments

Property Name	*Brief Description*	*Default Value*
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump or VPS that the task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	

SS Derivatize - Instruments

SS Derivatize - Sequence of Steps



The following is an overview for the sequence of steps.

1 **Aspirate** on page B-56
2 **Dispense** on page B-57
3 **Mix** on page B-58
4 **Inside Rinse** on page B-59
5 **Outside Rinse** on page B-59

ASPIRATE

Reservoir

1 Move Z to Z Safe Height
2 Move probe to Solution Well in Solution Zone
3 Aspirate Solution Air Gap at Air Gap Flow Rate
4 Lower probe into well to Solution Height
5 Aspirate Solution Volume at Solution Flow Rate using Liquid Level Following, if selected
6 Move Z to Z Safe Height

Tray

1 Move Z to Z Safe Height
2 Move probe to Source Well in Source Zone
3 Aspirate Source Air Gap at Air Gap Flow Rate
4 Lower probe into well to Source Height

5 Aspirate Source Volume + Extra Volume at Source Flow Rate using Liquid Level Following, if selected
6 Move Z to Z Safe Height
7 Move probe to Solution Well in Solution Zone
8 Aspirate Solution Air Gap at Air Gap Flow Rate
9 Lower probe into well to Solution Height
10 Aspirate Solution Volume at Solution Flow Rate using Liquid Level Following, if selected
11 Move Z to Z Safe Height

DISPENSE

1 Move probe to Result Well in Result Zone
2 Lower probe into well to Result Height
3 Switch solvent valve to Solvent Valve Position
4 Dispense Source Volume + Solution Air Gap + Solution Volume at Result Flow Rate using Liquid Level Following, if selected
5 Wait Equilibration Time
6 Perform a Touch Off (X-direction), if selected and move Z to Z Safe Height
7 Move probe to Inside Rinse Well in Inside Rinse Zone
8 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset
9 Dispense Extra Volume + Source Air Gap at Result Flow Rate
10 Move Z to Z Safe Height

MIX

Liquid

1 Move probe to Result Well in Result Zone (same as in DISPENSE)
2 Aspirate Mix Air Gap Volume at Mixing Flow Rate
3 Lower probe into well to Result Height
4 Aspirate Mixing Volume at Mixing Flow Rate using Liquid Level Following, if selected
5 Lower probe into well to Result Height
6 Switch solvent valve to Solvent Valve Position
7 Dispense Mixing Volume at Mixing Flow Rate using Liquid Level Following, if selected
8 Wait Equilibration time
9 Repeat steps 3–8 until Number of Mixes completes
10 Perform a Touch Off (X-direction), if selected and move Z to Z Safe Height
11 Move probe to Inside Rinse Well in Inside Rinse Zone
12 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset
13 Dispense Mix Air Gap Volume at Mixing Flow Rate

Air

1 Move probe to Result Well in Result Zone (same as in Dispense)
2 Aspirate Mix Air Gap Volume at Mixing Flow Rate
3 Move Z to Z Safe Height
4 Aspirate Mixing Volume at Mixing Flow Rate
5 Lower probe into well to Result Height
6 Switch solvent valve to Solvent Valve Position

7 Dispense Mixing volume at Mixing Flow Rate
8 Wait Equilibration Time
9 Repeat steps 3–8 until Number of Mixes completes
10 Perform a Touch Off (X-direction), if selected and move Z to Z Safe Height
11 Move probe to Inside Rinse Well in Inside Rinse Zone
12 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset
13 Dispense Mix Air Gap Volume at Mixing Flow Rate

INSIDE RINSE

1 Move Z to Z Safe Height
2 Move probe to Inside Rinse Well in Inside Rinse Zone
3 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset
4 Switch solvent valve to Inside Rinse Solvent Valve Position
5 Dispense Inside Rinse Volume at Inside Rinse Flow Rate
   - If the Inside Rinse Solvent Valve Position is not the same as the Solvent Valve Position, dispense Inside Rinse Volume + 2000 uL + Transfer Tubing volume
6 Move Z to Z Safe Height

OUTSIDE RINSE

1 Move probe to first well in Outside Rinse Zone
2 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset
3 Switch Peristaltic Rinse Pump on at Rinse Pump Speed
4 Switch solvent valve to Rinse Well 1 Solvent Valve Position

5 Dispense Outside Rinse Volume at Outside Rinse Flow Rate.

- If the current solvent valve position is not the same as the previous solvent valve position, dispense Outside Rinse Volume + 2000 uL + Transfer Tubing volume

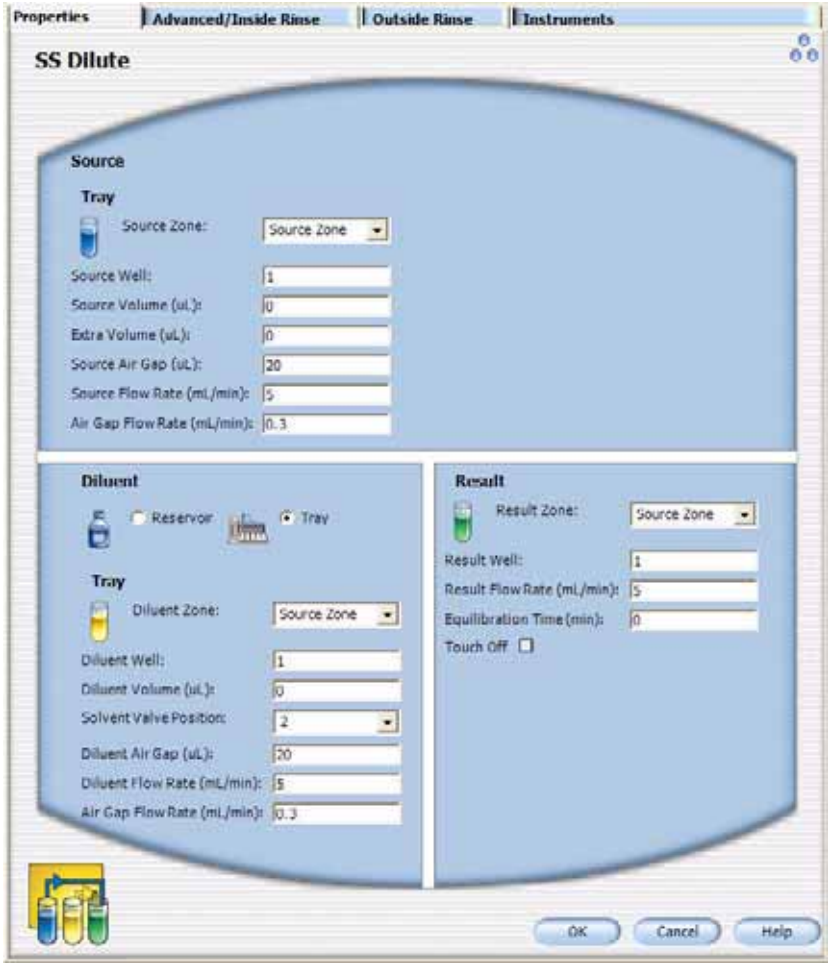
6 Switch Peristaltic Rinse Pump off

7 Move Z to Z Safe Height

8 Repeat steps 1–5 for the Number of Rinse Stations, incrementing the Outside Rinse well for each rinse station

SS Dilute

This task dispenses the specified volumes of liquid (source) from the tray and another liquid (diluent) from the reservoir or tray to the wells of the result zone.



For more information about the properties on each tab, see:

SS Dilute - Properties on page B-62

SS Dilute - Advanced/Inside Rinse on page B-64

SS Dilute - Outside Rinse on page B-68

SS Dilute - Instruments on page B-71

SS Dilute - Sequence of Steps on page B-72

SS Dilute - Properties

Property Name	*Brief Description*	*Default Value*
Source Zone	The zone from which the Source Volume is drawn.	
Source Well	The well in the Source Zone from which the Source Volume is drawn.	1
Source Volume	The quantity of a sample.	0 uL
Extra Volume	An additional volume to the Source Volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/reservoir solvent and the Source Volume.	0 uL
Source Air Gap	The quantity of the air gap aspirated before the Source Volume.	20 uL
Source Flow Rate	The speed at which the Source Volume and Extra Volume move into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	5 mL/min
Air Gap Flow Rate	The speed at which the Source Air Gap moves into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	0.3 mL/min
Diluent	Select Reservoir or Tray.	Tray
Tray Diluent Zone	The zone from which the Diluent Volume is drawn.	
Tray Diluent Well	The well in the Diluent Zone from which the Diluent Volume is drawn.	1
Tray Diluent Volume	The quantity of liquid used to dilute the Source Volume.	0 uL

SS Dilute - Properties Table *(Page 1 of 3)*

SS Dilute - Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Tray Solvent Valve Position	Desired position (1 through 6) of the solvent valve on the GX Solvent System. The position designated for waste cannot be used.	2
Tray Diluent Air Gap	The quantity of the air gap aspirated before the Diluent Volume.	20 uL
Tray Diluent Flow Rate	The speed at which the Diluent Volume moves into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	5 mL/min
Tray Air Gap Flow Rate	The speed at which the Diluent Air Gap moves into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	0.3 mL/min
Reservoir Solvent Valve Position	Desired position (1 through 6) of the solvent valve on the GX Solvent System. The position designated for waste cannot be used.	2
Reservoir Diluent Volume	The quantity of liquid used to dilute the Source Volume.	0 uL
Result Zone	The zone to which the Source and Diluent Volume are delivered.	
Result Well	The well in the Result Zone to which the Source and Diluent Volumes are delivered.	1

SS Dilute - Properties Table *(Page 2 of 3)*

SS Dilute - Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Result Flow Rate	The speed at which the Source and Diluent Volumes move out of the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	5 mL/min
Equilibration Time	Time the program waits after each dispense before moving out of the well.	0 min
Touch Off	Select Touch Off to move to the edge of the well after dispensing (in the X direction).	

SS Dilute - Properties Table *(Page 3 of 3)*

SS Dilute - Advanced/Inside Rinse

Property Name	*Brief Description*	*Default Value*
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated and up while it is dispensed. This selection changes the reference point for the Source Height, Diluent Height, and Result Height to the liquid surface. Initial Volumes should be set in the Sample List when using this option.	
Liquid Level Detection	When selected, the probe will stop when the instrument detects the liquid surface. This selection changes the reference point for the Source Height, Diluent Height, and Result Height to the height at which the liquid was detected. **Note:** If no liquid is detected, the probe will go to the bottom of the tube. This option can only be used on instruments which support Liquid Level Detection.	

SS Dilute - Advanced/Inside Rinse Table *(Page 1 of 4)*

SS Dilute - Advanced/Inside Rinse (Continued)

Property Name	*Brief Description*	*Default Value*
Sensitivity	Sensitivity is a percent (0–100%) used to detect liquid when Liquid Level Detection is used. A low setting is the most sensitive and higher settings are less sensitive.	1
Source Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from a defined reference point (Tube Bottom unless Liquid Level Detection or Liquid Level Following is selected) when aspirating the Source Volume.	2 mm
Diluent Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the defined reference point (Tube Bottom unless Liquid Level Detection or Liquid Level Following is selected) when aspirating the Diluent Volume.	2 mm
Result Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the defined reference point (Tube Bottom unless Liquid Level Detection or Liquid Level Following is selected) when delivering to the Result Zone.	2 mm
Inside Rinse Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the Inside Rinse at the rinse station. The position designated for waste cannot be used.	2
Inside Rinse Zone	The zone to which the Inside Rinse Volume is delivered.	Inside Rinse

SS Dilute - Advanced/Inside Rinse Table *(Page 2 of 4)*

SS Dilute - Advanced/Inside Rinse (Continued)

Property Name	*Brief Description*	*Default Value*
Inside Rinse Well	The well in the Inside Rinse Zone to which the Inside Rinse Volume is delivered.	1
Inside Rinse Volume	The quantity of liquid used to rinse the inside of the probe.	1000 uL
Inside Rinse Flow Rate	The speed at which the Inside Rinse Volume moves out of the probe and into the inside rinse position in the rinse station.	10 mL/min

SS Dilute - Advanced/Inside Rinse Table *(Page 3 of 4)*

SS Dilute - Advanced/Inside Rinse (Continued)

Property Name	*Brief Description*	*Default Value*
Inside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the inside rinse: **Absolute Value**: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). **Auto Calculate**: Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) and negative (-) value for the Inside Rinse Z Offset. **Top**: Moves probe to the Z Safe Height; accepts only a negative (-) value for the Inside Rinse Z Offset. **Tube Bottom**: Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Inside Rinse Z Offset values to move up from the bottom. **Tube Top**: Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Inside Rinse Z Offset. **Z Adjust**: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Inside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Inside Rinse Z Option for rinsing the probe at the inside rinse position in the rinse station.	0 mm

SS Dilute - Advanced/Inside Rinse Table *(Page 4 of 4)*

SS Dilute - Outside Rinse

Property Name	*Brief Description*	*Default Value*
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Zone
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	2000 uL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	10 mL/min

SS Dilute - Outside Rinse Table ***(Page 1 of 4)***

SS Dilute - Outside Rinse (Continued)

Property Name	*Brief Description*	*Default Value*
Outside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the outside rinse: **Absolute Value**: Moves the probe to the Z-value entered; if 0 is entered for the Outside Rinse Z Offset, the probe will move to the bed bottom (no safety factor incorporated). **Auto Calculate**: Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) and negative (-) value for the Outside Rinse Z Offset. **Top**: Moves probe to the Z Safe Height; accepts only a negative (-) value for the Outside Rinse Z Offset. **Tube Bottom**: Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. **Tube Top**: Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. **Z Adjust**: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option rinsing the probe at the outside rinse position in the rinse station.	0 mm

SS Dilute - Outside Rinse Table *(Page 2 of 4)*

SS Dilute - Outside Rinse (Continued)

Property Name	*Brief Description*	*Default Value*
Peristaltic Rinse Pump	The rinse pump that will be used for the flowing outside rinse. Select 1 if the rinse pump is wired to Output 1 and 24V Output 1 or select 2 if the rinse pump is wired to Output 2 and 24V Output 2.	1
Rinse Pump Speed	Select High, Low, or Off.	OFF
Number of Rinse Stations	Select the number of rinse stations to be used when performing the outside rinse. Valid range 1–5.	1
Rinse Well 1 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 1. Valid range 1–6. The position designated for waste cannot be used.	2
Rinse Well 2 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 2. Valid range 1–6. The position designated for waste cannot be used.	2
Rinse Well 3 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 3. Valid range 1–6. The position designated for waste cannot be used.	2

SS Dilute - Outside Rinse Table ***(Page 3 of 4)***

SS Dilute - Outside Rinse (Continued)

Property Name	*Brief Description*	*Default Value*
Rinse Well 4 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 4. Valid range 1–6. The position designated for waste cannot be used.	2
Rinse Well 5 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 5. Valid range 1–6. The position designated for waste cannot be used.	2

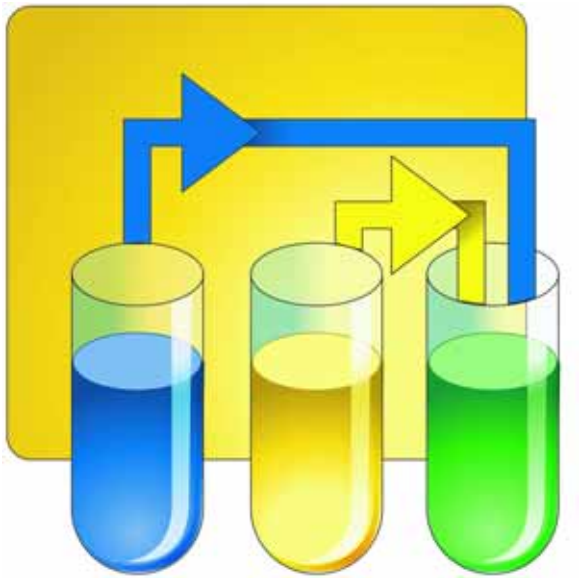
SS Dilute - Outside Rinse Table *(Page 4 of 4)*

SS Dilute - Instruments

Property Name	*Brief Description*	*Default Value*
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump or VPS that the task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	

SS Dilute - Outside Rinse

SS Dilute - Sequence of Steps



The following is an overview for the sequence of steps.

1 **Aspirate** on page B-72
2 **Dispense** on page B-73
3 **Inside Rinse** on page B-74
4 **Outside Rinse** on page B-74

ASPIRATE

Diluent Reservoir

1 Move Z to Z Safe Height
2 Move probe to Source Well in Source Zone
3 Aspirate Source Air Gap at Air Gap Flow Rate
4 Lower probe into well to Source Height
5 Aspirate Source Volume at Source Flow Rate using Liquid Level Following, if selected
6 Move Z to Z Safe Height

Diluent Tray

1 Move Z to Z Safe Height
2 Move probe to Source Well in Source Zone
3 Aspirate Source Air Gap at Air Gap Flow Rate
4 Lower probe into well to Source Height
5 Aspirate Source Volume + Extra Volume at Source Flow Rate using Liquid Level Following, if selected

6 Move Z to Z Safe Height
7 Aspirate Diluent Air Gap Volume at Diluent Air Gap Flow Rate
8 Move probe to Diluent Well in Diluent Zone
9 Lower probe into well to Diluent Height
10 Aspirate Diluent Volume at Diluent Flow Rate using Liquid Level Following, if selected
11 Move Z to Z Safe Height

DISPENSE

Reservoir

1 Move probe to Result Well in Result Zone
2 Lower probe into well to Result Height
3 Switch solvent valve to Solvent Valve Position
4 Dispense Source Volume + Source Air Gap + Diluent Volume at Result Flow Rate using Liquid Level Following, if selected
5 Wait Equilibration Time
6 Perform a Touch Off (X-direction), if selected and move Z to Z Safe Height

Tray

1 Move probe to Result Well in Result Zone
2 Lower probe into well to Result Height
3 Switch solvent valve to Solvent Valve Position
4 Dispense Source Volume + Diluent Air Gap + Diluent Volume at Result Flow Rate using Liquid Level Following, if selected

5 Wait Equilibration Time
6 Perform a Touch Off (X direction), if selected and move Z to Z Safe Height
7 Move probe to Inside Rinse Well in Inside Rinse Zone
8 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset
9 Dispense Extra Volume + Source Air Gap at Result Flow Rate

INSIDE RINSE

1 Move Z to Z Safe Height
2 Move probe to Inside Rinse Well in Inside Rinse Zone
3 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset
4 Switch solvent valve to Inside Rinse Solvent Valve Position
5 Dispense Inside Rinse Volume at Inside Rinse Flow Rate
   - If the Inside Rinse Solvent Valve Position is not the same as the Solvent Valve Position, dispense Inside Rinse Volume + 2000 uL + Transfer Tubing volume
6 Move Z to Z Safe Height

OUTSIDE RINSE

1 Move probe to first well in Outside Rinse Zone
2 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset
3 Switch Peristaltic Rinse Pump on at Rinse Pump Speed
4 Switch solvent valve to Rinse Well 1 Solvent Valve Position
5 Dispense Outside Rinse Volume at Outside Rinse Flow Rate.
   - If the current solvent valve position is not the same as the previous solvent valve position, dispense Outside Rinse Volume + 2000 uL + Transfer Tubing volume

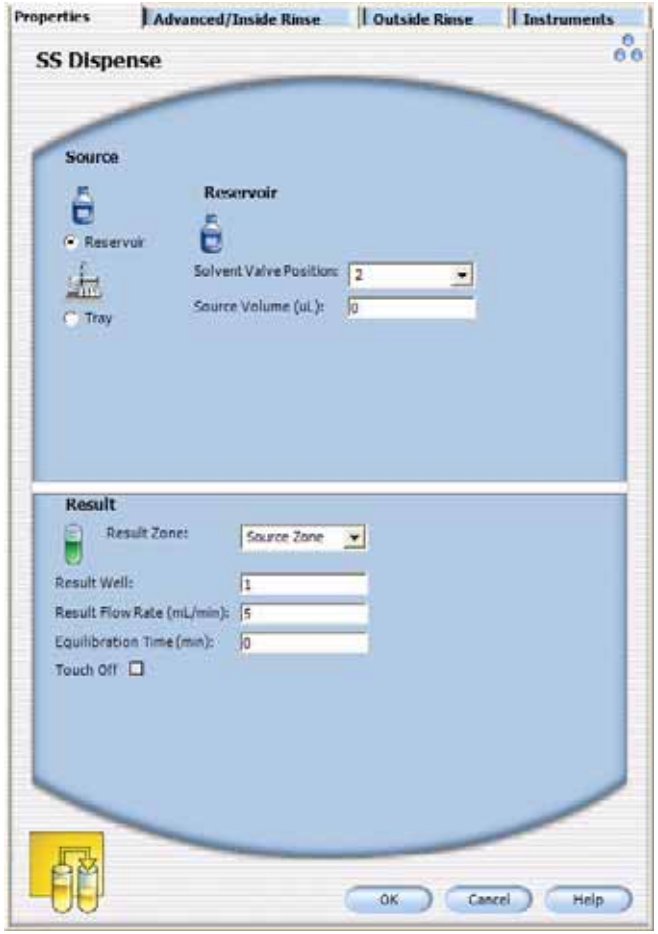
6 Switch Peristaltic Rinse Pump off

7 Move Z to Z Safe Height

8 Repeat steps 1–5 for the Number of Rinse Stations, incrementing the Outside Rinse well for each rinse station

SS Dispense

This task dispenses the specified volume of liquid (source) from the reservoir or tray to the wells of the result zone.



For more information about the properties on each tab, see:

SS Dispense - Properties on page B-77

SS Dispense - Advanced/Inside Rinse on page B-79

SS Dispense - Advanced/Outside Rinse on page B-82

SS Dispense - Instruments on page B-85

SS Dispense - Sequence of Steps on page B-86

SS Dispense - Properties

Property Name	*Brief Description*	*Default Value*
Source	Select Reservoir or Tray.	Reservoir
Reservoir Solvent Valve Position	Desired position (1 through 6) of the solvent valve on the GX Solvent System. The position designated for waste cannot be used.	2
Reservoir Source Volume	The quantity of a sample.	0 uL
Tray Source Zone	The zone from which the Source Volume is drawn.	
Tray Source Well	The well in the Source Zone from which the Source Volume is drawn.	1
Tray Solvent Valve Position	Desired position (1 through 6) of the solvent valve on the GX Solvent System. The position designated for waste cannot be used.	2
Tray Source Volume	The quantity of a sample.	0 uL
Tray Extra Volume	An additional volume to the Source Volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/reservoir solvent and the Source Volume.	0 uL
Tray Source Air Gap	The quantity of the air gap aspirated before the Source Volume.	20 uL

SS Dispense - Properties Table *(Page 1 of 2)*

SS Dispense - Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Tray Source Flow Rate	The speed at which the Source Volume and Extra Volume move into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	5 mL/min
Tray Air Gap Flow Rate	The speed at which the Source Air Gap moves into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	0.3 mL/min
Result Zone	The zone to which the Source Volume is delivered.	
Result Well	The well in the Result Zone to which the Source Volume is delivered.	1
Result Flow Rate	The speed at which the Source Volume moves out of the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	5 mL/min
Equilibration Time	Time the program waits after each dispense before moving out of the well.	0 min
Touch Off	Select Touch Off to move to the edge of the well after dispensing (in the X direction).	

SS Dispense - Properties Table *(Page 2 of 2)*

SS Dispense - Advanced/Inside Rinse

Property Name	*Brief Description*	*Default Value*
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated and up while it is dispensed. This selection changes the reference point for the Source Height and Result Height to the liquid surface. Initial Volumes should be set in the Sample List when using this option.	
Liquid Level Detection	When selected, the probe will stop when the instrument detects the liquid surface. This selection changes the reference point for the Source Height and Result Height to the height at which the liquid was detected. **Note:** If no liquid is detected, the probe will go to the bottom of the tube. This option can only be used on instruments which support Liquid Level Detection.	
Sensitivity	Sensitivity is a percent (0–100%) used to detect liquid when Liquid Level Detection is used. A low setting is the most sensitive and higher settings are less sensitive.	1
Source Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from a defined reference point (Tube Bottom unless Liquid Level Detection or Liquid Level Following is selected) when aspirating the Source Volume.	2 mm
Result Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the defined reference point (Tube Bottom unless Liquid Level Detection or Liquid Level Following is selected) when delivering to the Result Zone.	2 mm

SS Dispense - Advanced/Inside Rinse Table *(Page 1 of 3)*

SS Dispense - Advanced/Inside Rinse (Continued)

Property Name	*Brief Description*	*Default Value*
Inside Rinse Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the Inside Rinse at the rinse station. The position designated for waste cannot be used.	2
Inside Rinse Zone	The zone to which the Inside Rinse Volume is delivered.	Inside Rinse
Inside Rinse Well	The well in the Inside Rinse Zone to which the Inside Rinse Volume is delivered.	1
Inside Rinse Volume	The quantity of liquid used to rinse the inside of the probe.	1000 uL
Inside Rinse Flow Rate	The speed at which the Inside Rinse Volume moves out of the probe and into the inside rinse position in the rinse station.	10 mL/min

SS Dispense - Advanced/Inside Rinse Table *(Page 2 of 3)*

SS Dispense - Advanced/Inside Rinse (Continued)

Property Name	*Brief Description*	*Default Value*
Inside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the inside rinse: **Absolute Value**: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). **Auto Calculate**: Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) and negative (-) value for the Inside Rinse Z Offset. **Top**: Moves probe to the Z Safe Height; accepts only a negative (-) value for the Inside Rinse Z Offset. **Tube Bottom**: Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Inside Rinse Z Offset values to move up from the bottom. **Tube Top**: Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Inside Rinse Z Offset. **Z Adjust**: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Inside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Inside Rinse Z Option for rinsing the probe at the inside rinse position in the rinse station.	0 mm

SS Dispense - Advanced/Inside Rinse Table *(Page 3 of 3)*

SS Dispense - Advanced/Outside Rinse

Property Name	*Brief Description*	*Default Value*
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	2000 uL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	10 mL/min

SS Dispense - Advanced/Outside Rinse Table *(Page 1 of 4)*

SS Dispense - Advanced/Outside Rinse (Continued)

Property Name	*Brief Description*	*Default Value*
Outside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the outside rinse: **Absolute Value**: Moves the probe to the Z-value entered; if 0 is entered for the Outside Rinse Z Offset, the probe will move to the bed bottom (no safety factor incorporated). **Auto Calculate**: Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) and negative (-) value for the Outside Rinse Z Offset. **Top**: Moves probe to the Z Safe Height; accepts only a negative (-) value for the Outside Rinse Z Offset. **Tube Bottom**: Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. **Tube Top**: Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. **Z Adjust**: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option rinsing the probe at the outside rinse position in the rinse station.	0 mm

SS Dispense - Advanced/Outside Rinse Table *(Page 2 of 4)*

SS Dispense - Advanced/Outside Rinse (Continued)

Property Name	*Brief Description*	*Default Value*
Peristaltic Rinse Pump	The rinse pump that will be used for the flowing outside rinse. Select 1 if the rinse pump is wired to Output 1 and 24V Output 1 or select 2 if the rinse pump is wired to Output 2 and 24V Output 2.	1
Rinse Pump Speed	Select High, Low, or Off.	OFF
Number of Rinse Stations	Select the number of rinse stations to be used when performing the outside rinse. Valid range 1–5.	1
Rinse Well 1 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 1. Valid range 1–6. The position designated for waste cannot be used.	2
Rinse Well 2 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 2. Valid range 1–6. The position designated for waste cannot be used.	2
Rinse Well 3 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 3. Valid range 1–6. The position designated for waste cannot be used.	2

SS Dispense - Advanced/Outside Rinse Table *(Page 3 of 4)*

SS Dispense - Advanced/Outside Rinse (Continued)

Property Name	*Brief Description*	*Default Value*
Rinse Well 4 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 4. Valid range 1–6. The position designated for waste cannot be used.	2
Rinse Well 5 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 5. Valid range 1–6. The position designated for waste cannot be used.	2

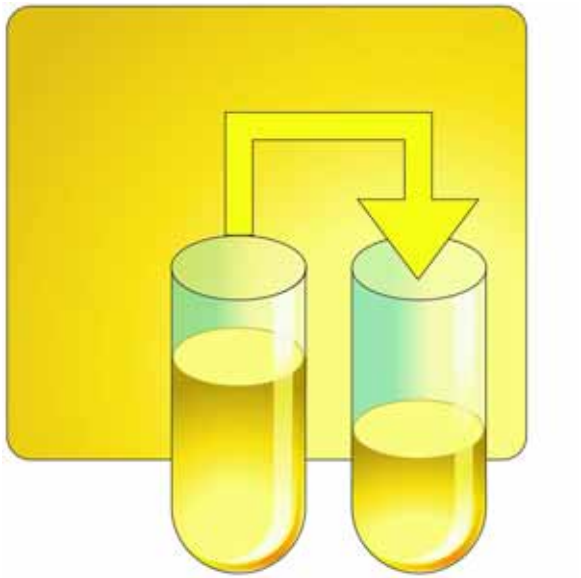
SS Dispense - Advanced/Outside Rinse Table ***(Page 4 of 4)***

SS Dispense - Instruments

Property Name	*Brief Description*	*Default Value*
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump or VPS that the task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	

SS Dispense - Instruments

SS Dispense - Sequence of Steps



The following is an overview for the sequence of steps.

1 **Aspirate** on page B-86
2 **Dispense** on page B-86
3 **Inside Rinse** on page B-87
4 **Outside Rinse** on page B-87

ASPIRATE

Reservoir

1 Move Z to Z Safe Height

Tray

1 Move Z to Z Safe Height
2 Aspirate Source Air Gap at Air Gap Flow Rate
3 Move probe to Source Well in Source Zone
4 Lower probe into well to Source Height
5 Aspirate Source Volume + Extra Volume at Source Flow Rate using Liquid Level Following, if selected
6 Move Z to Z Safe Height

DISPENSE

1 Move probe to Result Well in Result Zone
2 Lower probe into well to Result Height

3 Dispense Source Volume at Result Flow Rate using Liquid Level Following, if selected. Solvent Valve at Solvent Valve Position selected

4 Wait Equilibration Time

5 Perform a Touch Off (X-direction), if selected and move Z to Z Safe Height

6 If Source from Tray and Source Volume is greater than Transfer Tubing volume, repeat Aspirate (Air Gap and Extra Volume not aspirated) and Dispense until Source Volume is delivered.

7 Move probe to Inside Rinse Well in Inside Rinse Zone

8 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset

9 Dispense Source Air Gap + Extra Volume at Result Flow Rate

INSIDE RINSE

1 Move Z to Z Safe Height

2 Move probe to Inside Rinse Well in Inside Rinse Zone

3 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset

4 Switch solvent valve to Inside Rinse Solvent Valve Position

5 Dispense Inside Rinse Volume at Inside Rinse Flow Rate

- If the Inside Rinse Solvent Valve Position is not the same as the Solvent Valve Position, dispense Inside Rinse Volume + 2000 uL + Transfer Tubing volume

6 Move Z to Z Safe Height

OUTSIDE RINSE

1 Move probe to first well in Outside Rinse Zone

2 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset

3 Switch Peristaltic Rinse Pump on at Rinse Pump Speed

4 Switch solvent valve to Rinse Well 1 Solvent Valve Position

5 Dispense Outside Rinse Volume at Outside Rinse Flow Rate.

- If the current solvent valve position is not the same as the previous solvent valve position, dispense Outside Rinse Volume + 2000 uL + Transfer Tubing volume

6 Switch Peristaltic Rinse Pump off

7 Move Z to Z Safe Height

8 Repeat steps 1–5 for the Number of Rinse Stations, incrementing the Outside Rinse well for each rinse station

SS Dispense Random to Random

This task transfers liquid (source) from wells in the source zone to random wells in the result zone.

For more information about the properties on each tab, see:

SS Dispense Random to Random - Properties on page B-90

SS Dispense Random to Random - Advanced/Inside Rinse on page B-91

SS Dispense Random to Random - Advanced/Outside Rinse on page B-94

SS Dispense Random to Random - Instruments on page B-97

SS Dispense Random to Random - Sequence of Steps on page B-98

SS Dispense Random to Random - Properties

Property Name	*Brief Description*	*Default Value*
Source Zone	The zone from which the Source Volume is drawn.	
Source Well	The well in the Source Zone from which the Source Volume is drawn.	1
Solvent Valve Position	Desired position (1 through 6) of the solvent valve on the GX Solvent System. The position designated for waste cannot be used.	2
Source Volume	The quantity of a sample.	0 uL
Extra Volume	An additional volume to the Source Volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/reservoir solvent and the Source Volume.	0 uL
Source Air Gap	The quantity of the air gap aspirated before the Source Volume.	20 uL
Source Flow Rate	The speed at which the Source Volume and Extra Volume move into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	5 mL/min
Air Gap Flow Rate	The speed at which the Source Air Gap moves into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	0.3 mL/min
Result Zone	The zone to which the Source Volume is delivered.	
Result Well	The well in the Result Zone to which the Source Volume is delivered.	1
Result Flow Rate	The speed at which the Source Volume moves out of the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	5 mL/min

SS Dispense Random to Random - Properties Table *(Page 1 of 2)*

SS Dispense Random to Random - Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Equilibration Time	Time the program waits after each dispense before moving out of the well.	0 min
Touch Off	Select Touch Off to move to the edge of the well (in the X direction).	

SS Dispense Random to Random - Properties Table *(Page 2 of 2)*

SS Dispense Random to Random - Advanced/Inside Rinse

Property Name	*Brief Description*	*Default Value*
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated and up while it is dispensed. This selection changes the reference point for the Source Height and Result Height to the liquid surface. Initial Volumes should be set in the Sample List when using this option.	
Liquid Level Detection	When selected, the probe will stop when the instrument detects the liquid surface. This selection changes the reference point for the Source Height and Result Height to the height at which the liquid was detected. **Note:** If no liquid is detected, the probe will go to the bottom of the tube. This option can only be used on instruments which support Liquid Level Detection.	
Sensitivity	Sensitivity is a percent (0–100%) used to detect liquid when Liquid Level Detection is used. A low setting is the most sensitive and higher settings are less sensitive.	1

SS Dispense Random to Random - Advanced/Inside Rinse Table *(Page 1 of 3)*

SS Dispense Random to Random - Advanced/Inside Rinse (Continued)

Property Name	*Brief Description*	*Default Value*
Source Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from a defined reference point (Tube Bottom unless Liquid Level Detection or Liquid Level Following is selected) when aspirating the Source Volume.	2 mm
Result Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the defined reference point (Tube Bottom unless Liquid Level Detection or Liquid Level Following is selected) when delivering to the Result Zone.	2 mm
Inside Rinse Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the Inside Rinse at the rinse station. The position designated for waste cannot be used.	2
Inside Rinse Zone	The zone to which the Inside Rinse Volume is delivered.	Inside Rinse
Inside Rinse Well	The well in the Inside Rinse Zone to which the Inside Rinse Volume is delivered.	1
Inside Rinse Volume	The quantity of liquid used to rinse the inside of the probe.	1000 uL
Inside Rinse Flow Rate	The speed at which the Inside Rinse Volume moves out of the probe and into the inside rinse position in the rinse station.	10 mL/min

SS Dispense Random to Random - Advanced/Inside Rinse Table *(Page 2 of 3)*

SS Dispense Random to Random - Advanced/Inside Rinse (Continued)

Property Name	*Brief Description*	*Default Value*
Inside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the inside rinse: **Absolute Value**: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). **Auto Calculate**: Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) and negative (-) value for the Inside Rinse Z Offset. **Top**: Moves probe to the Z Safe Height; accepts only a negative (-) value for the Inside Rinse Z Offset. **Tube Bottom**: Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Inside Rinse Z Offset values to move up from the bottom. **Tube Top**: Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Inside Rinse Z Offset. **Z Adjust**: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Inside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Inside Rinse Z Option for rinsing the probe at the inside rinse position in the rinse station.	0 mm

SS Dispense Random to Random - Advanced/Inside Rinse Table *(Page 3 of 3)*

SS Dispense Random to Random - Advanced/Outside Rinse

Property Name	*Brief Description*	*Default Value*
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	2000 uL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	10 mL/min

SS Dispense Random to Random - Advanced/Outside Rinse Table *(Page 1 of 4)*

SS Dispense Random to Random - Advanced/Outside Rinse (Continued)

Property Name	*Brief Description*	*Default Value*
Outside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the outside rinse: **Absolute Value**: Moves the probe to the Z-value entered; if 0 is entered for the Outside Rinse Z Offset, the probe will move to the bed bottom (no safety factor incorporated). **Auto Calculate**: Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) and negative (-) value for the Outside Rinse Z Offset. **Top**: Moves probe to the Z Safe Height; accepts only a negative (-) value for the Outside Rinse Z Offset. **Tube Bottom**: Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. **Tube Top**: Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. **Z Adjust**: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option rinsing the probe at the outside rinse position in the rinse station.	0 mm

SS Dispense Random to Random - Advanced/Outside Rinse Table *(Page 2 of 4)*

SS Dispense Random to Random - Advanced/Outside Rinse (Continued)

Property Name	*Brief Description*	*Default Value*
Peristaltic Rinse Pump	The rinse pump that will be used for the flowing outside rinse. Select 1 if the rinse pump is wired to Output 1 and 24V Output 1 or select 2 if the rinse pump is wired to Output 2 and 24V Output 2.	1
Rinse Pump Speed	Select High, Low, or Off.	OFF
Number of Rinse Stations	Select the number of rinse stations to be used when performing the outside rinse. Valid range 1–5.	1
Rinse Well 1 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 1. Valid range 1–6. The position designated for waste cannot be used.	2
Rinse Well 2 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 2. Valid range 1–6. The position designated for waste cannot be used.	2
Rinse Well 3 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 3. Valid range 1–6. The position designated for waste cannot be used.	2

SS Dispense Random to Random - Advanced/Outside Rinse Table *(Page 3 of 4)*

SS Dispense Random to Random - Advanced/Outside Rinse (Continued)

Property Name	*Brief Description*	*Default Value*
Rinse Well 4 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 4. Valid range 1–6. The position designated for waste cannot be used.	2
Rinse Well 5 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 5. Valid range 1–6. The position designated for waste cannot be used.	2

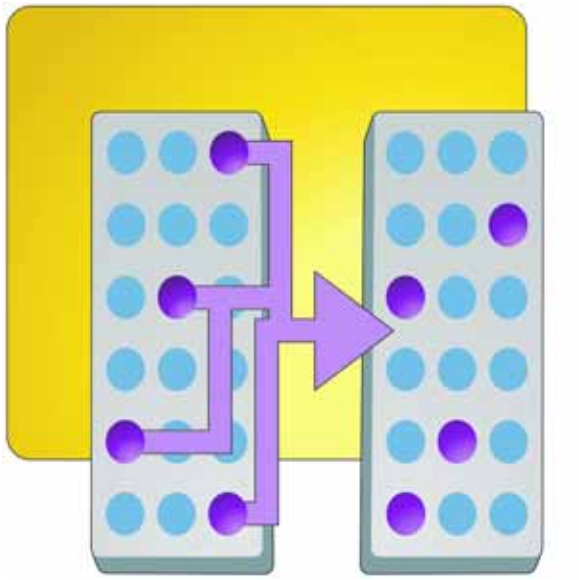
SS Dispense Random to Random - Advanced/Outside Rinse Table *(Page 4 of 4)*

SS Dispense Random to Random - Instruments

Property Name	*Brief Description*	*Default Value*
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump or VPS that the task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	

SS Dispense Random to Random - Instruments

SS Dispense Random to Random - Sequence of Steps



The following is an overview for the sequence of steps.

1 **Aspirate** on page B-98
2 **Dispense** on page B-98
3 **Inside Rinse** on page B-99
4 **Outside Rinse** on page B-99

ASPIRATE

1 Move Z to Z Safe Height
2 Aspirate Source Air Gap at Air Gap Flow Rate
3 Move probe to Source Well in Source Zone
4 Lower probe into well to Source Height
5 Aspirate Source Volume + Extra Volume at Source Flow Rate using Liquid Level Following, if selected
6 Move Z to Z Safe Height

DISPENSE

1 Move probe to Result Well in Result Zone
2 Lower probe into well to Result Height
3 Switch solvent valve to Solvent Valve Position
4 Dispense Source Volume at Result Flow Rate using Liquid Level Following, if selected
5 Wait Equilibration Time
6 Perform a Touch Off (X-direction), if selected and move Z to Z Safe Height

7 If Source Volume is greater than Transfer Tubing volume, repeat Aspirate (Air Gap and Extra Volume not aspirated) and Dispense until Source Volume delivered.

8 Move probe to Inside Rinse Well in Inside Rinse Zone

9 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset

10 Dispense Extra Volume + Source Air Gap at Result Flow Rate

INSIDE RINSE

1 Move Z to Z Safe Height

2 Move probe to Inside Rinse Well in Inside Rinse Zone

3 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset

4 Switch solvent valve to Inside Rinse Solvent Valve Position

5 Dispense Inside Rinse Volume at Inside Rinse Flow Rate

- If the Inside Rinse Solvent Valve Position is not the same as the Solvent Valve Position, dispense Inside Rinse Volume + 2000 uL + Transfer Tubing volume

6 Move Z to Z Safe Height

OUTSIDE RINSE

1 Move probe to first well in Outside Rinse Zone

2 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset

3 Switch Peristaltic Rinse Pump on at Rinse Pump Speed

4 Switch solvent valve to Rinse Well 1 Solvent Valve Position

5 Dispense Outside Rinse Volume at Outside Rinse Flow Rate.

- If the current solvent valve position is not the same as the previous solvent valve position, dispense Outside Rinse Volume + 2000 uL + Transfer Tubing volume

6 Switch Peristaltic Rinse Pump off

7 Move Z to Z Safe Height

8 Repeat steps 1–5 for the Number of Rinse Stations, incrementing the Outside Rinse well for each rinse station

SS Inject

This task aspirates the specified volume of liquid (source), switches the injection valve to LOAD, dispenses the volume to the wells of the injection zone, and then switches the injection valve to INJECT.

For more information about the properties on each tab, see:

SS Inject - Properties on page B-102

SS Inject - Advanced/Inside Rinse on page B-103

SS Inject - Advanced/Outside Rinse on page B-106

SS Inject - Instruments on page B-109

SS Inject - Sequence of Steps on page B-110

SS Inject - Properties

Property Name	*Brief Description*	*Default Value*
Source Zone	The zone from which the Source Volume is drawn.	
Source Well	The well in the Source Zone from which the Source Volume is drawn.	1
Solvent Valve Position	Desired position (1 through 6) of the solvent valve on the GX Solvent System. The position designated for waste cannot be used.	2
Source Volume	The quantity of a sample.	0 uL
Extra Volume	An additional volume to the Source Volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/reservoir solvent and the Source Volume.	0 uL
Source Air Gap	The quantity of the air gap aspirated before the Source Volume.	20 uL
Source Flow Rate	The speed at which the Source Volume and Extra Volume move into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	5 mL/min
Air Gap Flow Rate	The speed at which the Source Air Gap moves into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	0.3 mL/min
Injection Zone	The zone to which the Source Volume is dispensed.	
Injection Well	The well in the Injection Zone to which the Source Volume is delivered.	1
Injection Valve ID	The Injection Valve to use for the task. Select 2 for the Left Direct Inject and 3 for the Right Direct Inject.	2

SS Inject - Properties Table *(Page 1 of 2)*

SS Inject - Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Injection Flow Rate	The speed at which the Source Volume moves out of the probe and into the injection port.	3 mL/min
Equilibration Time	Time the program waits after each dispense before moving out of the well.	0 min

SS Inject - Properties Table *(Page 2 of 2)*

SS Inject - Advanced/Inside Rinse

Property Name	*Brief Description*	*Default Value*
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated and up while it is dispensed. This selection changes the reference point for the Source Height to the liquid surface. Initial Volumes should be set in the Sample List when using this option.	
Liquid Level Detection	When selected, the probe will stop when the instrument detects the liquid surface. This selection changes the reference point for the Source Height to the height at which the liquid was detected. **Note:** If no liquid is detected, the probe will go to the bottom of the tube. This option can only be used on instruments which support Liquid Level Detection.	
Sensitivity	Sensitivity is a percent (0–100%) used to detect liquid when Liquid Level Detection is used. A low setting is the most sensitive and higher settings are less sensitive.	1

SS Inject - Advanced/Inside Rinse Table *(Page 1 of 3)*

SS Inject - Advanced/Inside Rinse (Continued)

Property Name	*Brief Description*	*Default Value*
Source Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from a defined reference point (Tube Bottom unless Liquid Level Detection or Liquid Level Following is selected) when aspirating the Source Volume.	2 mm
Inject Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the defined reference point (Tube Bottom) when delivering to the Injection Zone.	0 mm
Inside Rinse Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the Inside Rinse at the rinse station. The position designated for waste cannot be used.	2
Inside Rinse Zone	The zone to which the Inside Rinse Volume is delivered.	Inside Rinse
Inside Rinse Well	The well in the Inside Rinse Zone to which the Inside Rinse Volume is delivered.	1
Inside Rinse Volume	The quantity of liquid used to rinse the inside of the probe.	1000 uL
Inside Rinse Flow Rate	The speed at which the Inside Rinse Volume moves out of the probe and into the inside rinse position in the rinse station.	10 mL/min

SS Inject - Advanced/Inside Rinse Table *(Page 2 of 3)*

SS Inject - Advanced/Inside Rinse (Continued)

Property Name	*Brief Description*	*Default Value*
Inside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the inside rinse: **Absolute Value**: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). **Auto Calculate**: Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) and negative (-) value for the Inside Rinse Z Offset. **Top**: Moves probe to the Z Safe Height; accepts only a negative (-) value for the Inside Rinse Z Offset. **Tube Bottom**: Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Inside Rinse Z Offset values to move up from the bottom. **Tube Top**: Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Inside Rinse Z Offset. **Z Adjust**: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Inside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Inside Rinse Z Option for rinsing the probe at the inside rinse position in the rinse station.	0 mm

SS Inject - Advanced/Inside Rinse Table *(Page 3 of 3)*

SS Inject - Advanced/Outside Rinse

Property Name	*Brief Description*	*Default Value*
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	2000 uL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	10 mL/min

SS Inject - Advanced/Outside Rinse Table *(Page 1 of 4)*

SS Inject - Advanced/Outside Rinse (Continued)

Property Name	*Brief Description*	*Default Value*
Outside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the outside rinse: **Absolute Value**: Moves the probe to the Z-value entered; if 0 is entered for the Outside Rinse Z Offset, the probe will move to the bed bottom (no safety factor incorporated). **Auto Calculate**: Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) and negative (-) value for the Outside Rinse Z Offset. **Top**: Moves probe to the Z Safe Height; accepts only a negative (-) value for the Outside Rinse Z Offset. **Tube Bottom**: Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. **Tube Top**: Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. **Z Adjust**: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option rinsing the probe at the outside rinse position in the rinse station.	0 mm

SS Inject - Advanced/Outside Rinse Table *(Page 2 of 4)*

SS Inject - Advanced/Outside Rinse (Continued)

Property Name	*Brief Description*	*Default Value*
Peristaltic Rinse Pump	The rinse pump that will be used for the flowing outside rinse. Select 1 if the rinse pump is wired to Output 1 and 24V Output 1 or select 2 if the rinse pump is wired to Output 2 and 24V Output 2.	1
Rinse Pump Speed	Select High, Low, or Off.	OFF
Number of Rinse Stations	Select the number of rinse stations to be used when performing the outside rinse. Valid range 1–5.	1
Rinse Well 1 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 1. Valid range 1–6. The position designated for waste cannot be used.	2
Rinse Well 2 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 2. Valid range 1–6. The position designated for waste cannot be used.	2
Rinse Well 3 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 3. Valid range 1–6. The position designated for waste cannot be used.	2

SS Inject - Advanced/Outside Rinse Table *(Page 3 of 4)*

SS Inject - Advanced/Outside Rinse (Continued)

Property Name	*Brief Description*	*Default Value*
Rinse Well 4 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 4. Valid range 1–6. The position designated for waste cannot be used.	2
Rinse Well 5 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 5. Valid range 1–6. The position designated for waste cannot be used.	2

SS Inject - Advanced/Outside Rinse Table ***(Page 4 of 4)***

SS Inject - Instruments

Property Name	*Brief Description*	*Default Value*
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump or VPS that the task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	
Injector	The injector or injection module that the task will affect.	

SS Inject - Instruments

SS Inject - Sequence of Steps

The following is an overview for the sequence of steps.

1 **Aspirate** on page B-110
2 **Dispense** on page B-110
3 **Inside Rinse** on page B-111
4 **Outside Rinse** on page B-111

ASPIRATE

1 Move Z to Z Safe Height
2 Aspirate Source Air Gap at Air Gap Flow Rate
3 Move probe to Source Well in Source Zone
4 Lower probe into well to Source Height
5 Aspirate Source Volume + Extra Volume at Source Flow Rate using Liquid Level Following, if selected
6 Move Z to Z Safe Height
7 Switch Injection Valve Position to LOAD

DISPENSE

1 Move probe to Injection Well in Injection Zone
2 Lower probe into well to Inject Height from Tube Bottom
3 Switch solvent valve to Solvent Valve Position
4 Dispense Source Volume at Injection Flow Rate
5 Wait Equilibration Time

6 Switch Injection Valve Position to INJECT
7 Move Z to Z Safe Height
8 Move probe to Inside Rinse Well in Inside Rinse Zone
9 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset
10 Dispense Source Air Gap + Extra Volume at Result Flow Rate

INSIDE RINSE

1 Move Z to Z Safe Height
2 Move probe to Inside Rinse Well in Inside Rinse Zone
3 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset
4 Switch solvent valve to Inside Rinse Solvent Valve Position
5 Dispense Inside Rinse Volume at Inside Rinse Flow Rate
   - If the Inside Rinse Solvent Valve Position is not the same as the Solvent Valve Position, dispense Inside Rinse Volume + 2000 uL + Transfer Tubing volume
6 Move Z to Z Safe Height

OUTSIDE RINSE

1 Move probe to first well in Outside Rinse Zone
2 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset
3 Switch Peristaltic Rinse Pump on at Rinse Pump Speed
4 Switch solvent valve to Rinse Well 1 Solvent Valve Position
5 Dispense Outside Rinse Volume at Outside Rinse Flow Rate.
   - If the current solvent valve position is not the same as the previous solvent valve position, dispense Outside Rinse Volume + 2000 uL + Transfer Tubing volume

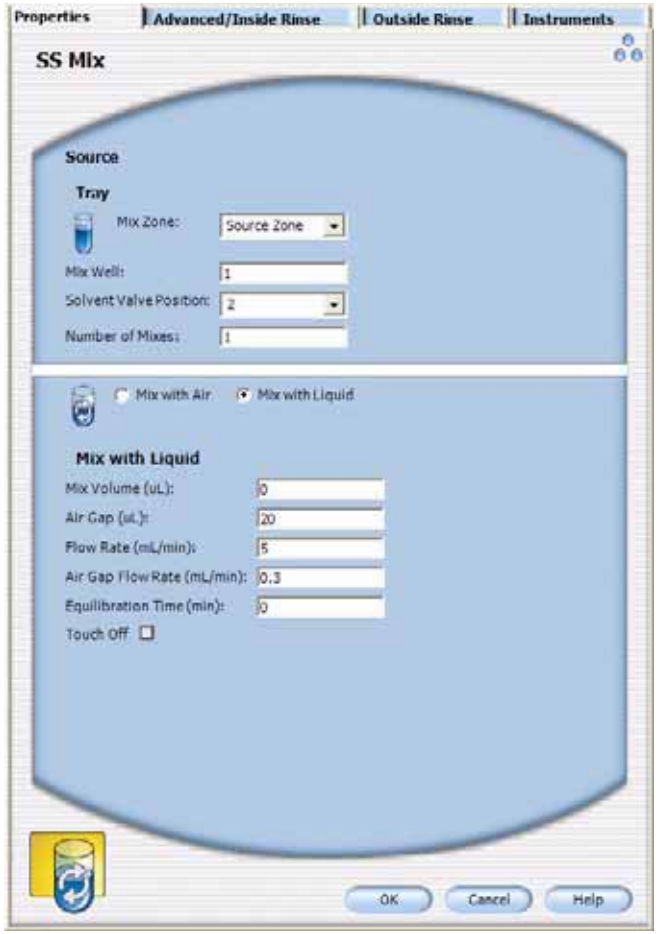
6 Switch Peristaltic Rinse Pump off

7 Move Z to Z Safe Height

8 Repeat steps 1–5 for the Number of Rinse Stations, incrementing the Outside Rinse well for each rinse station

SS Mix

This task aspirates air or liquid and then dispenses it into a well a specified number of times.



For more information about the properties on each tab, see:

SS Mix - Properties on page B-114

SS Mix - Advanced/Inside Rinse on page B-116

SS Mix - Outside Rinse on page B-119

SS Mix - Instruments on page B-122

SS Mix - Sequence of Steps on page B-123

SS Mix - Properties

Property Name	*Brief Description*	*Default Value*
Mix Zone	The zone in which the mix is performed.	
Mix Well	The well in the Mix Zone in which the Mix is performed.	1
Solvent Valve Position	Desired position (1 through 6) of the solvent valve on the GX Solvent System. The position designated for waste cannot be used.	2
Number of Mixes	Number of times the Task should repeat the commands related to mixing.	1
Mix with Air/Mix with Liquid	Select Mix with Air or Mix with Liquid.	Mix with Liquid
Mix with Liquid Mix Volume	The quantity of liquid used as part of a mixing process.	0 uL
Mix with Liquid Air Gap	The quantity of an air gap aspirated before the Mix Volume.	20 uL
Mix with Liquid Flow Rate	The speed at which the Mix Volume moves into and out of the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	5 mL/min
Mix with Liquid Air Gap Flow Rate	The speed at which the Air Gap Volume moves into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	0.3 mL/min
Mix with Liquid Equilibration Time	Time the program waits after each dispense before moving out of the well.	0 min

SS Mix - Properties Table *(Page 1 of 2)*

SS Mix - Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Mix with Liquid Touch Off	Select Touch Off to move to the edge of the well after dispensing (in the X direction).	
Mix with Air Mix Volume	The quantity of air used as part of a mixing process.	0 uL
Mix with Air Air Gap	The quantity of an air gap aspirated before the Mix Volume.	20 uL
Mix with Air Flow Rate	The speed at which the Mix Volume moves into and out of the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	5 mL/min
Mix with Air Equilibration Time	Time the program waits after each dispense before moving out of the well.	0 min
Mix with Air Touch Off	Select Touch Off to move to the edge of the well after dispensing (in the X direction).	

SS Mix - Properties Table *(Page 2 of 2)*

SS Mix - Advanced/Inside Rinse

Property Name	*Brief Description*	*Default Value*
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated and up while it is dispensed. This selection changes the reference point for the Source Height and Result Height to the liquid surface. Initial Volumes should be set in the Sample List when using this option.	
Liquid Level Detection	When selected, the probe will stop when the instrument detects the liquid surface. This selection changes the reference point for the Source Height and Result Height to the height at which the liquid was detected. **Note:** If no liquid is detected, the probe will go to the bottom of the tube. This option can only be used on instruments which support Liquid Level Detection.	
Sensitivity	Sensitivity is a percent (0–100%) used to detect liquid when Liquid Level Detection is used. A low setting is the most sensitive and higher settings are less sensitive.	1
Source Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from a defined reference point (Tube Bottom unless Liquid Level Detection or Liquid Level Following is selected) when aspirating the Mix Volume.	2 mm
Result Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the defined reference point (Tube Bottom unless Liquid Level Detection or Liquid Level Following is selected) when delivering to the Mix Zone.	2 mm

SS Mix - Advanced/Inside Rinse Table *(Page 1 of 3)*

SS Mix - Advanced/Inside Rinse (Continued)

Property Name	*Brief Description*	*Default Value*
Inside Rinse Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the Inside Rinse at the rinse station. The position designated for waste cannot be used.	2
Inside Rinse Zone	The zone to which the Inside Rinse Volume is delivered.	Inside Rinse
Inside Rinse Well	The well in the Inside Rinse Zone to which the Inside Rinse Volume is delivered.	1
Inside Rinse Volume	The quantity of liquid used to rinse the inside of the probe.	1000 uL
Inside Rinse Flow Rate	The speed at which the Inside Rinse Volume moves out of the probe and into the inside rinse position in the rinse station.	10 mL/min

SS Mix - Advanced/Inside Rinse Table *(Page 2 of 3)*

SS Mix - Advanced/Inside Rinse (Continued)

Property Name	*Brief Description*	*Default Value*
Inside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the inside rinse: **Absolute Value**: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). **Auto Calculate**: Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) and negative (-) value for the Inside Rinse Z Offset. **Top**: Moves probe to the Z Safe Height; accepts only a negative (-) value for the Inside Rinse Z Offset. **Tube Bottom**: Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Inside Rinse Z Offset values to move up from the bottom. **Tube Top**: Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Inside Rinse Z Offset. **Z Adjust**: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Inside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Inside Rinse Z Option for rinsing the probe at the inside rinse position in the rinse station.	0 mm

SS Mix - Advanced/Inside Rinse Table *(Page 3 of 3)*

SS Mix - Outside Rinse

Property Name	*Brief Description*	*Default Value*
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	2000 uL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	10 mL/min

SS Mix - Outside Rinse Table *(Page 1 of 4)*

SS Mix - Outside Rinse (Continued)

Property Name	*Brief Description*	*Default Value*
Outside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the outside rinse: **Absolute Value**: Moves the probe to the Z-value entered; if 0 is entered for the Outside Rinse Z Offset, the probe will move to the bed bottom (no safety factor incorporated). **Auto Calculate**: Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) and negative (-) value for the Outside Rinse Z Offset. **Top**: Moves probe to the Z Safe Height; accepts only a negative (-) value for the Outside Rinse Z Offset. **Tube Bottom**: Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. **Tube Top**: Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. **Z Adjust**: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option rinsing the probe at the outside rinse position in the rinse station.	0

SS Mix - Outside Rinse Table *(Page 2 of 4)*

SS Mix - Outside Rinse (Continued)

Property Name	*Brief Description*	*Default Value*
Peristaltic Rinse Pump	The rinse pump that will be used for the flowing outside rinse. Select 1 if the rinse pump is wired to Output 1 and 24V Output 1 or select 2 if the rinse pump is wired to Output 2 and 24V Output 2.	1
Rinse Pump Speed	Select High, Low, or Off.	OFF
Number of Rinse Stations	Select the number of rinse stations to be used when performing the outside rinse. Valid range 1–5.	1
Rinse Well 1 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 1. Valid range 1–6. The position designated for waste cannot be used.	2
Rinse Well 2 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 2. Valid range 1–6. The position designated for waste cannot be used.	2
Rinse Well 3 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 3. Valid range 1–6. The position designated for waste cannot be used.	2

SS Mix - Outside Rinse Table *(Page 3 of 4)*

SS Mix - Outside Rinse (Continued)

Property Name	*Brief Description*	*Default Value*
Rinse Well 4 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 4. Valid range 1–6. The position designated for waste cannot be used.	2
Rinse Well 5 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 5. Valid range 1–6. The position designated for waste cannot be used.	2

SS Mix - Outside Rinse Table *(Page 4 of 4)*

SS Mix - Instruments

Property Name	*Brief Description*	*Default Value*
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump or VPS that the task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	

SS Mix - Instruments

SS Mix - Sequence of Steps

The following is an overview for the sequence of steps.

1 **Mix with Liquid** on page B-123
2 **Mix with Air** on page B-124
3 **Inside Rinse** on page B-124
4 **Outside Rinse** on page B-125

MIX WITH LIQUID

1 Move Z to Z Safe Height
2 Aspirate Air Gap at Air Gap Flow Rate
3 Move probe to Mix Well in Mix Zone
4 Lower probe into well to Source Height
5 Aspirate Mix Volume at Flow Rate using Liquid Level Following, if selected
6 Lower probe into well to Result Height
7 Dispense Mix Volume at Flow Rate using Liquid Level Following, if selected. Solvent Valve at Solvent Valve Position selected
8 Wait Equilibration Time
9 Repeat steps 4-8 until Number of Mixes is complete
10 Perform a Touch Off (X direction), if selected and move Z to Z Safe Height
11 Move probe to Inside Rinse Well in Inside Rinse Zone
12 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset
13 Dispense Air Gap at Air Gap Flow Rate

MIX WITH AIR

1 Move Z to Z Safe Height
2 Aspirate Air Gap at Flow Rate
3 Move probe to Mix Well in Mix Zone
4 Move Z to Z Safe Height
5 Aspirate Mix Volume at Flow Rate
6 Lower probe into well to Result Height
7 Dispense Mix Volume at Flow Rate. Solvent Valve at Solvent Valve Position selected
8 Wait Equilibration Time
9 Repeat 4-8 until Number of Mixes completes
10 Perform a Touch Off (X direction), if selected and move Z to Z Safe Height
11 Move probe to Inside Rinse Well in Inside Rinse Zone
12 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset
13 Dispense Air Gap at Flow Rate

INSIDE RINSE

1 Move Z to Z Safe Height
2 Move probe to Inside Rinse Well in Inside Rinse Zone
3 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset
4 Switch solvent valve to Inside Rinse Solvent Valve Position

5 Dispense Inside Rinse Volume at Inside Rinse Flow Rate

- If the Inside Rinse Solvent Valve Position is not the same as the Solvent Valve Position, dispense Inside Rinse Volume + 2000 uL + Transfer Tubing volume

6 Move Z to Z Safe Height

OUTSIDE RINSE

1 Move probe to first well in Outside Rinse Zone

2 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset

3 Switch Peristaltic Rinse Pump on at Rinse Pump Speed

4 Switch solvent valve to Rinse Well 1 Solvent Valve Position

5 Dispense Outside Rinse Volume at Outside Rinse Flow Rate.

- If the current solvent valve position is not the same as the previous solvent valve position, dispense Outside Rinse Volume + 2000 uL + Transfer Tubing volume

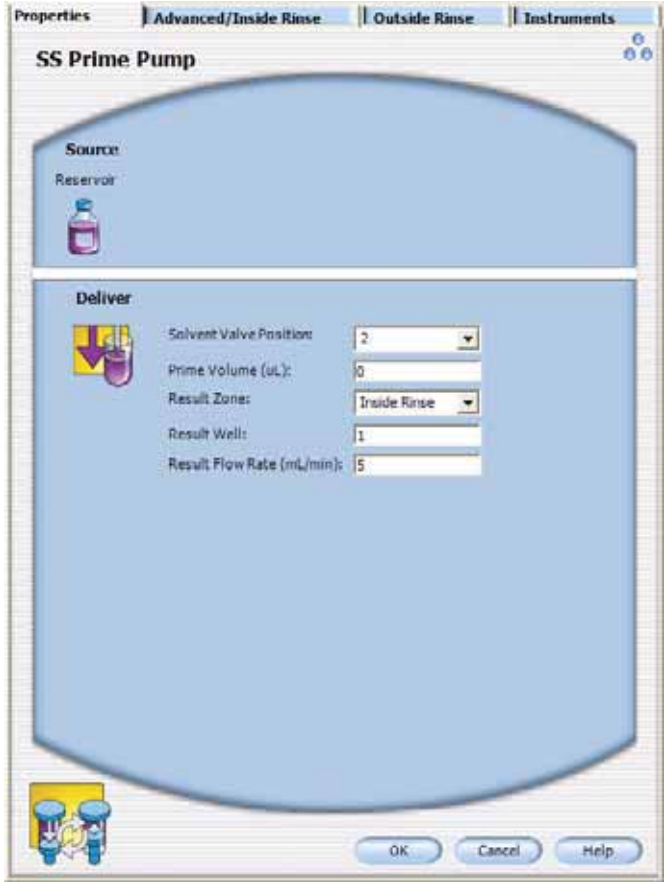
6 Switch Peristaltic Rinse Pump off

7 Move Z to Z Safe Height

8 Repeat steps 1–5 for the Number of Rinse Stations, incrementing the Outside Rinse well for each rinse station

SS Prime Pump

This task primes the transfer tubing with reservoir solvent in the result zone.



For more information about the properties on each tab, see:

SS Prime Pump - Properties on page B-127

SS Prime Pump - Advanced/Inside Rinse on page B-127

SS Prime Pump - Outside Rinse on page B-130

SS Prime Pump - Instruments on page B-133

SS Prime Pump - Sequence of Steps on page B-134

SS Prime Pump - Properties

Property Name	*Brief Description*	*Default Value*
Source	Source for Prime Pump is Reservoir.	Reservoir
Solvent Valve Position	Desired position (1 through 6) of the solvent valve on the GX Solvent System. The position designated for waste cannot be used.	2
Prime Volume	The quantity of the prime.	0 uL
Result Zone	The zone to which the Prime Volume is delivered.	Inside Rinse
Result Well	The well in the Result Zone to which the Prime Volume is delivered.	1
Result Flow Rate	The speed at which the Prime Volume moves out of the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	5 mL/min

SS Prime Pump - Properties

SS Prime Pump - Advanced/Inside Rinse

Property Name	*Brief Description*	*Default Value*
Result Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Bottom when dispensing to the Result Zone.	2 mm
Inside Rinse Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the Inside Rinse at the rinse station. The position designated for waste cannot be used.	2
Inside Rinse Zone	The zone to which the Inside Rinse Volume is delivered.	Inside Rinse

SS Prime Pump - Advanced/Inside Rinse Table *(Page 1 of 3)*

SS Prime Pump - Advanced/Inside Rinse (Continued)

Property Name	*Brief Description*	*Default Value*
Inside Rinse Well	The well in the Inside Rinse Zone to which the Inside Rinse Volume is delivered.	1
Inside Rinse Volume	The quantity of liquid used to rinse the inside of the probe.	1000 uL
Inside Rinse Flow Rate	The speed at which the Inside Rinse Volume moves out of the probe and into the inside rinse position in the rinse station.	10 mL/min

SS Prime Pump - Advanced/Inside Rinse Table *(Page 2 of 3)*

SS Prime Pump - Advanced/Inside Rinse (Continued)

Property Name	*Brief Description*	*Default Value*
Inside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the inside rinse: **Absolute Value**: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). **Auto Calculate**: Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) and negative (-) value for the Inside Rinse Z Offset. **Top**: Moves probe to the Z Safe Height; accepts only a negative (-) value for the Inside Rinse Z Offset. **Tube Bottom**: Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Inside Rinse Z Offset values to move up from the bottom. **Tube Top**: Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Inside Rinse Z Offset. **Z Adjust**: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Inside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Inside Rinse Z Option for rinsing the probe at the inside rinse position in the rinse station.	0 mm

SS Prime Pump - Advanced/Inside Rinse Table *(Page 3 of 3)*

SS Prime Pump - Outside Rinse

Property Name	*Brief Description*	*Default Value*
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	2000 uL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	10 mL/min

SS Prime Pump - Outside Rinse Table *(Page 1 of 4)*

SS Prime Pump - Outside Rinse (Continued)

Property Name	*Brief Description*	*Default Value*
Outside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the outside rinse: **Absolute Value**: Moves the probe to the Z-value entered; if 0 is entered for the Outside Rinse Z Offset, the probe will move to the bed bottom (no safety factor incorporated). **Auto Calculate**: Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) and negative (-) value for the Outside Rinse Z Offset. **Top**: Moves probe to the Z Safe Height; accepts only a negative (-) value for the Outside Rinse Z Offset. **Tube Bottom**: Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. **Tube Top**: Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. **Z Adjust**: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option rinsing the probe at the outside rinse position in the rinse station.	0 mm

SS Prime Pump - Outside Rinse Table *(Page 2 of 4)*

SS Prime Pump - Outside Rinse (Continued)

Property Name	*Brief Description*	*Default Value*
Peristaltic Rinse Pump	The rinse pump that will be used for the flowing outside rinse. Select 1 if the rinse pump is wired to Output 1 and 24V Output 1 or select 2 if the rinse pump is wired to Output 2 and 24V Output 2.	1
Rinse Pump Speed	Select High, Low, or Off.	OFF
Number of Rinse Stations	Select the number of rinse stations to be used when performing the outside rinse. Valid range 1–5.	1
Rinse Well 1 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 1. Valid range 1–6. The position designated for waste cannot be used.	2
Rinse Well 2 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 2. Valid range 1–6. The position designated for waste cannot be used.	2
Rinse Well 3 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 3. Valid range 1–6. The position designated for waste cannot be used.	2

SS Prime Pump - Outside Rinse Table *(Page 3 of 4)*

SS Prime Pump - Outside Rinse (Continued)

Property Name	*Brief Description*	*Default Value*
Rinse Well 4 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 4. Valid range 1–6. The position designated for waste cannot be used.	2
Rinse Well 5 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 5. Valid range 1–6. The position designated for waste cannot be used.	2

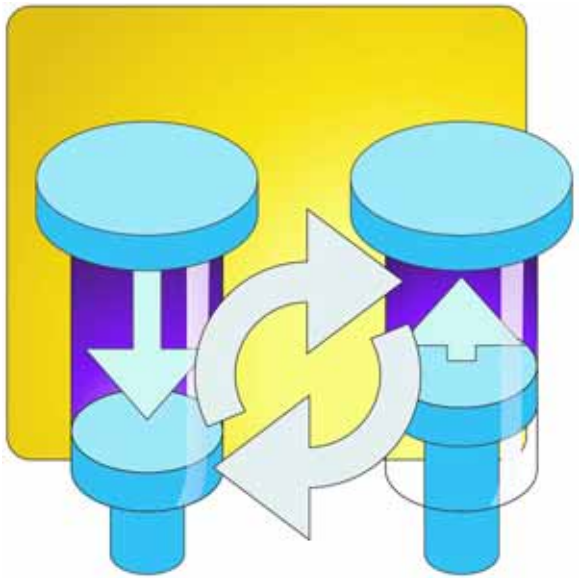
SS Prime Pump - Outside Rinse Table *(Page 4 of 4)*

SS Prime Pump - Instruments

Property Name	*Brief Description*	*Default Value*
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump or VPS that the task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	

SS Prime Pump - Instruments

SS Prime Pump - Sequence of Steps



The following is an overview for the sequence of steps.

1 **Deliver** on page B-134
2 **Inside Rinse** on page B-134
3 **Outside Rinse** on page B-135

DELIVER

1 Move Z to Z Safe Height
2 Move probe to Result Well in Result Zone
3 Lower probe into well to Result Height from Tube Bottom
4 Switch solvent valve to Solvent Valve Position
5 Dispense Prime Volume at Result Flow Rate
6 Move Z to Z Safe Height

INSIDE RINSE

1 Move Z to Z Safe Height
2 Move probe to Inside Rinse Well in Inside Rinse Zone
3 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset
4 Switch solvent valve to Inside Rinse Solvent Valve Position
5 Dispense Inside Rinse Volume at Inside Rinse Flow Rate
   - If the Inside Rinse Solvent Valve Position is not the same as the Solvent Valve Position, dispense Inside Rinse Volume + 2000 uL + Transfer Tubing volume
6 Move Z to Z Safe Height

OUTSIDE RINSE

1 Move probe to first well in Outside Rinse Zone

2 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset

3 Switch Peristaltic Rinse Pump on at Rinse Pump Speed

4 Switch solvent valve to Rinse Well 1 Solvent Valve Position

5 Dispense Outside Rinse Volume at Outside Rinse Flow Rate.

- If the current solvent valve position is not the same as the previous solvent valve position, dispense Outside Rinse Volume + 2000 uL + Transfer Tubing volume

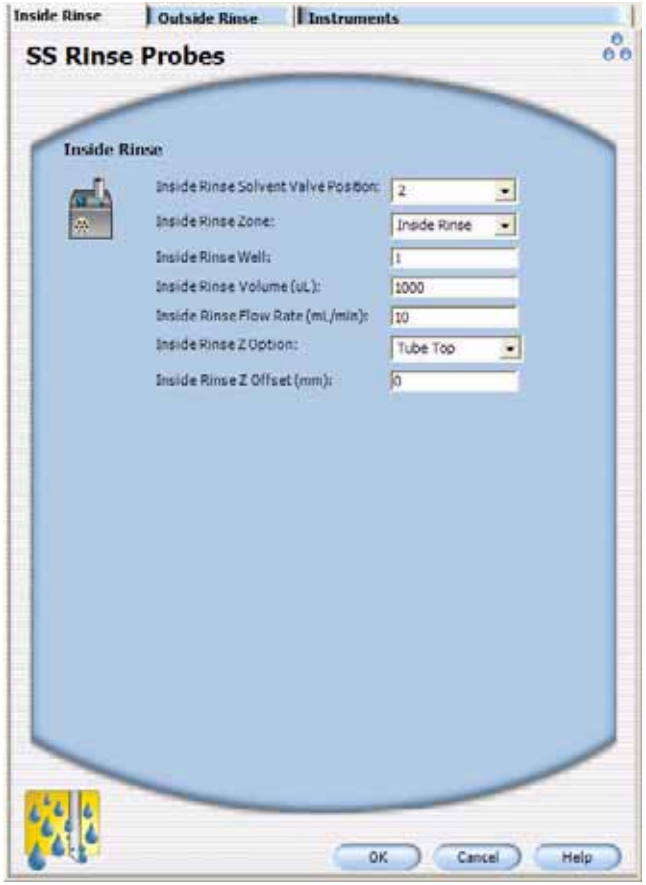
6 Switch Peristaltic Rinse Pump off

7 Move Z to Z Safe Height

8 Repeat steps 1–5 for the Number of Rinse Stations, incrementing the Outside Rinse well for each rinse station

SS Rinse Probes

This task rinses the inside and outside of the probe using liquid from the pump reservoir.



For more information about the properties on each tab, see:

SS Rinse Probes - Inside Rinse on page B-137

SS Rinse Probes - Outside Rinse on page B-139

SS Rinse Probes - Instruments on page B-142

SS Rinse Probes - Sequence of Steps on page B-143

SS Rinse Probes - Inside Rinse

Property Name	*Brief Description*	*Default Value*
Inside Rinse Solvent Rinse Position	Desired position of the solvent selection valve on the GX Solvent System during the Inside Rinse at the rinse station. The position designated for waste cannot be used.	2
Inside Rinse Zone	The zone to which the Inside Rinse Volume is delivered.	Inside Rinse
Inside Rinse Well	The well in the Inside Rinse Zone to which the Inside Rinse Volume is delivered.	1
Inside Rinse Volume	The quantity of liquid used to rinse the inside of the probe.	1000 uL
Inside Rinse Flow Rate	The speed at which the Inside Rinse Volume moves out of the probe and into the inside rinse position in the rinse station.	10 mL/min

SS Rinse Probes - Inside Rinse Table *(Page 1 of 2)*

SS Rinse Probes - Inside Rinse (Continued)

Property Name	*Brief Description*	*Default Value*
Inside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the inside rinse: **Absolute Value**: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). **Auto Calculate**: Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) and negative (-) value for the Inside Rinse Z Offset. **Top**: Moves probe to the Z Safe Height; accepts only a negative (-) value for the Inside Rinse Z Offset. **Tube Bottom**: Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Inside Rinse Z Offset values to move up from the bottom. **Tube Top**: Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Inside Rinse Z Offset. **Z Adjust**: Moves the probe from its current position up (positive value) or down (negative value).	Tube Bottom
Inside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Inside Rinse Z Option for rinsing the probe at the inside rinse position in the rinse station.	0 mm

SS Rinse Probes - Inside Rinse Table *(Page 2 of 2)*

SS Rinse Probes - Outside Rinse

Property Name	*Brief Description*	*Default Value*
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	2000 uL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	10 mL/min

SS Rinse Probes - Outside Rinse Table *(Page 1 of 4)*

SS Rinse Probes - Outside Rinse (Continued)

Property Name	*Brief Description*	*Default Value*
Outside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the Outside rinse: **Absolute Value**: Moves the probe to the Z-value entered; if 0 is entered for the Outside Rinse Z Offset, the probe will move to the bed bottom (no safety factor incorporated). **Auto Calculate**: Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) and negative (-) value for the Outside Rinse Z Offset. **Top**: Moves probe to the Z Safe Height; accepts only a negative (-) value for the Outside Rinse Z Offset. **Tube Bottom**: Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. **Tube Top**: Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. **Z Adjust**: Moves the probe from its current position up (positive value) or down (negative value).	Tube Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option rinsing the probe at the outside rinse position in the rinse station.	0 mm

SS Rinse Probes - Outside Rinse Table *(Page 2 of 4)*

SS Rinse Probes - Outside Rinse (Continued)

Property Name	*Brief Description*	*Default Value*
Peristaltic Rinse Pump	The rinse pump that will be used for the flowing outside rinse. Select 1 if the rinse pump is wired to Output 1 and 24V Output 1 or select 2 if the rinse pump is wired to Output 2 and 24V Output 2.	1
Rinse Pump Speed	Select High, Low, or Off.	OFF
Number of Rinse Stations	Select the number of rinse stations to be used when performing the outside rinse. Valid range 1–5.	1
Rinse Well 1 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 1. Valid range 1–6. The position designated for waste cannot be used.	2
Rinse Well 2 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 2. Valid range 1–6. The position designated for waste cannot be used.	2
Rinse Well 3 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 3. Valid range 1–6. The position designated for waste cannot be used.	2

SS Rinse Probes - Outside Rinse Table *(Page 3 of 4)*

SS Rinse Probes - Outside Rinse (Continued)

Property Name	*Brief Description*	*Default Value*
Rinse Well 4 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 4. Valid range 1–6. The position designated for waste cannot be used.	2
Rinse Well 5 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 5. Valid range 1–6. The position designated for waste cannot be used.	2

SS Rinse Probes - Outside Rinse Table ***(Page 4 of 4)***

SS Rinse Probes - Instruments

Property Name	*Brief Description*	*Default Value*
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump or VPS that the task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	

SS Rinse Probes - Instruments

SS Rinse Probes - Sequence of Steps

The following is an overview for the sequence of steps.

1 **Inside Rinse** on page B-143
2 **Outside Rinse** on page B-143

INSIDE RINSE

1 Move Z to Z Safe Height
2 Move probe to Inside Rinse Well in Inside Rinse Zone
3 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset
4 Switch solvent valve to Inside Rinse Solvent Valve Position
5 Dispense Inside Rinse Volume at Inside Rinse Flow Rate
6 Move Z to Z Safe Height

OUTSIDE RINSE

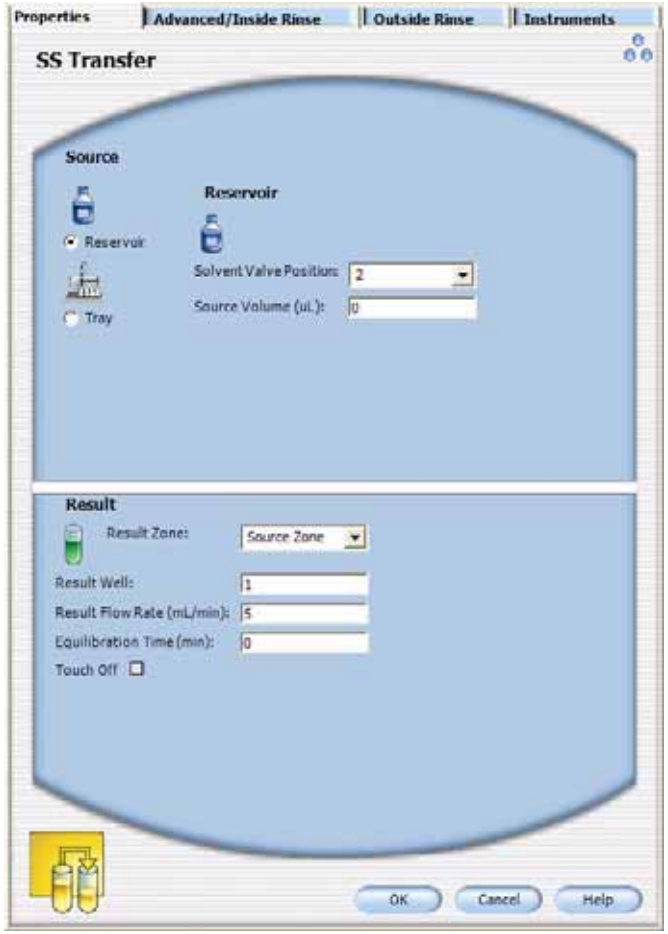
1 Move probe to first well in Outside Rinse Zone
2 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset
3 Switch Peristaltic Rinse Pump on at Rinse Pump Speed
4 Switch solvent valve to Rinse Well 1 Solvent Valve Position
5 Dispense Outside Rinse Volume at Outside Rinse Flow Rate.
   - If the current solvent valve position is not the same as the previous solvent valve position, dispense Outside Rinse Volume + 2000 uL + Transfer Tubing volume
6 Switch Peristaltic Rinse Pump off

7 Move Z to Z Safe Height

8 Repeat steps 1–5 for the Number of Rinse Stations, incrementing the Outside Rinse well for each rinse station

SS Transfer

This task dispenses the specified volume of liquid (source) from the reservoir or tray to the wells of the result zone.



For more information about the properties on each tab, see:

SS Transfer - Properties on page B-146

SS Transfer - Advanced/Inside Rinse on page B-148

SS Transfer - Outside Rinse on page B-151

SS Transfer - Instruments on page B-154

SS Transfer - Sequence of Steps on page B-155

SS Transfer - Properties

Property Name	*Brief Description*	*Default Value*
Source	Select Reservoir or Tray.	Reservoir
Reservoir Solvent Valve Position	Desired position (1 through 6) of the solvent valve on the GX Solvent System. The position designated for waste cannot be used.	2
Reservoir Source Volume	The quantity of a sample.	0 uL
Tray Source Zone	The zone from which the Source Volume is drawn.	
Tray Source Well	The well in the Source Zone from which the Source Volume is drawn.	1
Tray Solvent Valve Position	Desired position (1 through 6) of the solvent valve on the GX Solvent System. The position designated for waste cannot be used.	2
Tray Source Volume	The quantity of a sample.	0 uL
Tray Extra Volume	An additional volume to the Source Volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/reservoir solvent and the Source Volume.	0 uL
Tray Source Air Gap	The quantity of the air gap aspirated before the Source Volume.	20 uL

SS Transfer - Properties Table *(Page 1 of 2)*

SS Transfer - Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Tray Source Flow Rate	The speed at which the Source Volume and Extra Volume move into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	5 mL/min
Tray Air Gap Flow Rate	The speed at which the Source Air Gap moves into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	0.3 mL/min
Result Zone	The zone to which the Source Volume is delivered.	
Result Well	The well in the Result Zone to which the Source Volume is delivered.	1
Result Flow Rate	The speed at which the Source Volume moves out of the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	5 mL/min
Equilibration Time	Time the program waits after each dispense before moving out of the well.	0 min
Touch Off	Select Touch Off to move to the edge of the well after dispensing (in the X direction).	

SS Transfer - Properties Table *(Page 2 of 2)*

SS Transfer - Advanced/Inside Rinse

Property Name	*Brief Description*	*Default Value*
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated and up while it is dispensed. This selection changes the reference point for the Source Height and Result Height to the liquid surface. Initial Volumes should be set in the Sample List when using this option.	
Liquid Level Detection	When selected, the probe will stop when the instrument detects the liquid surface. This selection changes the reference point for the Source Height and Result Height to the height at which the liquid was detected. **Note:** If no liquid is detected, the probe will go to the bottom of the tube. This option can only be used on instruments which support Liquid Level Detection.	
Sensitivity	Sensitivity is a percent (0–100%) used to detect liquid when Liquid Level Detection is used. A low setting is the most sensitive and higher settings are less sensitive.	1
Source Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from a defined reference point (Tube Bottom unless Liquid Level Detection or Liquid Level Following is selected) when aspirating the Source Volume.	2 mm
Result Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the defined reference point (Tube Bottom unless Liquid Level Detection or Liquid Level Following is selected) when delivering to the Result Zone.	2 mm

SS Transfer - Advanced/Inside Rinse Table *(Page 1 of 3)*

SS Transfer - Advanced/Inside Rinse (Continued)

Property Name	*Brief Description*	*Default Value*
Inside Rinse Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the Inside Rinse at the rinse station. The position designated for waste cannot be used.	2
Inside Rinse Zone	The zone to which the Inside Rinse Volume is delivered.	Inside Rinse
Inside Rinse Well	The well in the Inside Rinse Zone to which the Inside Rinse Volume is delivered.	1
Inside Rinse Volume	The quantity of liquid used to rinse the inside of the probe.	1000 uL
Inside Rinse Flow Rate	The speed at which the Inside Rinse Volume moves out of the probe and into the inside rinse position in the rinse station.	10 mL/min

SS Transfer - Advanced/Inside Rinse Table *(Page 2 of 3)*

SS Transfer - Advanced/Inside Rinse (Continued)

Property Name	*Brief Description*	*Default Value*
Inside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the inside rinse: **Absolute Value**: Moves the probe to the Z-value entered; if 0 is entered, probe will move to the bed bottom (no safety factor incorporated). **Auto Calculate**: Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) and negative (-) value for the Inside Rinse Z Offset. **Top**: Moves probe to the Z Safe Height; accepts only a negative (-) value for the Inside Rinse Z Offset. **Tube Bottom**: Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Inside Rinse Z Offset values to move up from the bottom. **Tube Top**: Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Inside Rinse Z Offset. **Z Adjust**: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Inside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Inside Rinse Z Option for rinsing the probe at the inside rinse position in the rinse station.	0 mm

SS Transfer - Advanced/Inside Rinse Table *(Page 3 of 3)*

SS Transfer - Outside Rinse

Property Name	*Brief Description*	*Default Value*
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
Outside Rinse Volume	The quantity of liquid used to rinse the outside of the probe.	2000 uL
Outside Rinse Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station.	10 mL/min

SS Transfer - Outside Rinse Table *(Page 1 of 4)*

SS Transfer - Outside Rinse (Continued)

Property Name	*Brief Description*	*Default Value*
Outside Rinse Z Option	One of six defined reference points, selected from a drop-down list, used when performing the outside rinse: **Absolute Value**: Moves the probe to the Z-value entered; if 0 is entered for the Outside Rinse Z Offset, the probe will move to the bed bottom (no safety factor incorporated). **Auto Calculate**: Places probe into well and at the liquid level using initial volume from the Sample List and well dimensions from the Bed Layout; accepts a positive (+) and negative (-) value for the Outside Rinse Z Offset. **Top**: Moves probe to the Z Safe Height; accepts only a negative (-) value for the Outside Rinse Z Offset. **Tube Bottom**: Moves the probe to the well bottom as defined by the Bed Layout; accepts only positive Outside Rinse Z Offset values to move up from the bottom. **Tube Top**: Moves the probe to the top of the well as defined by the Bed Layout; accepts a positive (+) or negative (-) value for the Outside Rinse Z Offset. **Z Adjust**: Moves the probe from the current position up (positive value) or down (negative value).	Tube Bottom
Outside Rinse Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from a reference point defined by the Outside Rinse Z Option rinsing the probe at the outside rinse position in the rinse station.	0 mm

SS Transfer - Outside Rinse Table *(Page 2 of 4)*

SS Transfer - Outside Rinse (Continued)

Property Name	*Brief Description*	*Default Value*
Peristaltic Rinse Pump	The rinse pump that will be used for the flowing outside rinse. Select 1 if the rinse pump is wired to Output 1 and 24V Output 1 or select 2 if the rinse pump is wired to Output 2 and 24V Output 2.	1
Rinse Pump Speed	Select High, Low, or Off.	OFF
Number of Rinse Stations	Select the number of rinse stations to be used when performing the outside rinse. Valid range 1–5.	1
Rinse Well 1 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 1. Valid range 1–6. The position designated for waste cannot be used.	2
Rinse Well 2 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 2. Valid range 1–6. The position designated for waste cannot be used.	2
Rinse Well 3 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 3. Valid range 1–6. The position designated for waste cannot be used.	2

SS Transfer - Outside Rinse Table *(Page 3 of 4)*

SS Transfer - Outside Rinse (Continued)

Property Name	*Brief Description*	*Default Value*
Rinse Well 4 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 4. Valid range 1–6. The position designated for waste cannot be used.	2
Rinse Well 5 Solvent Valve Position	Desired position of the solvent selection valve on the GX Solvent System during the outside rinse at rinse station 5. Valid range 1–6. The position designated for waste cannot be used.	2

SS Transfer - Outside Rinse Table *(Page 4 of 4)*

SS Transfer - Instruments

Property Name	*Brief Description*	*Default Value*
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump or VPS that the task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	

SS Transfer - Instruments

SS Transfer - Sequence of Steps

The following is an overview for the sequence of steps.

1 **Aspirate** on page B-155
2 **Dispense** on page B-155
3 **Inside Rinse** on page B-156
4 **Outside Rinse** on page B-157

ASPIRATE

Reservoir

1 Move Z to Z Safe Height

Tray

1 Move Z to Z Safe Height
2 Aspirate Source Air Gap at Air Gap Flow Rate
3 Move probe to Source Well in Source Zone
4 Lower probe into well to Source Height
5 Aspirate Source Volume + Extra Volume at Source Flow Rate using Liquid Level Following, if selected
6 Move Z to Z Safe Height

DISPENSE

1 Move probe to Result Well in Result Zone
2 Lower probe into well to Result Height

3 Switch solvent valve to Solvent Valve Position

4 Dispense Source Volume at Result Flow Rate using Liquid Level Following, if selected

5 Wait Equilibration Time

6 Perform a Touch Off (X-direction), if selected and move Z to Z Safe Height

7 If Source from Tray and Source Volume is greater than Transfer Tubing volume, repeat Aspirate (Air Gap and Extra Volume not aspirated) and Dispense until Source Volume is delivered

8 Move probe to Inside Rinse Well in Inside Rinse Zone

9 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset

10 Dispense Source Air Gap + Extra Volume at Result Flow Rate

INSIDE RINSE

1 Move Z to Z Safe Height

2 Move probe to Inside Rinse Well in Inside Rinse Zone

3 Lower probe into well to Inside Rinse Z Option and Inside Rinse Z Offset

4 Switch solvent valve to Inside Rinse Solvent Valve Position

5 Dispense Inside Rinse Volume at Inside Rinse Flow Rate

- If the Inside Rinse Solvent Valve Position is not the same as the Solvent Valve Position, dispense Inside Rinse Volume + 2000 uL + Transfer Tubing volume

6 Move Z to Z Safe Height

OUTSIDE RINSE

1 Move probe to first well in Outside Rinse Zone

2 Lower probe into well to Outside Rinse Z Option and Outside Rinse Z Offset

3 Switch Peristaltic Rinse Pump on at Rinse Pump Speed

4 Switch solvent valve to Rinse Well 1 Solvent Valve Position

5 Dispense Outside Rinse Volume at Outside Rinse Flow Rate.

- If the current solvent valve position is not the same as the previous solvent valve position, dispense Outside Rinse Volume + 2000 uL + Transfer Tubing volume

6 Switch Peristaltic Rinse Pump off

7 Move Z to Z Safe Height

8 Repeat steps 1–5 for the Number of Rinse Stations, incrementing the Outside Rinse well for each rinse station

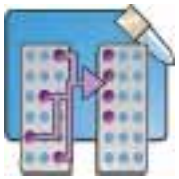
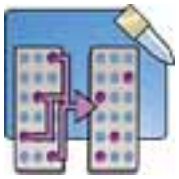
Tasks - Disposable Tips

C

Gilson supplies Disposable Tips tasks for use on the Quad-Z 215 with Disposable Tips.

Disposable Tips

Disposable Tips Tasks

	Gilson Task Name and Description
	Cherry Pick with Tips This task transfers liquid (source) from wells in the source zone to a sequence of wells (beginning with the starting well) in the result zone.
	Dispense Random to Random with Tips This task transfers liquid (source) from wells in the source zone to random wells in the result zone.
	Dispense with Tips This task aspirates the specified volume of liquid (source) from the reservoir or tray and then dispenses the volume to the wells of the result zone.
	Eject Tips This task ejects tips to the tip waste zone.

Disposable Tips Tasks Table *(Page 1 of 3)*

Disposable Tips Tasks (Continued)

Load Tips

This task loads tips.

Mix with Tips

This task aspirates air or liquid and then dispenses it into a well a specified number of times.

Prime Pump with Tips

This task primes the pump in the specified zone. It aspirates the specified volume (or the syringe capacity) from the reservoir and then dispenses to the wells in the result zone.

Prime Rinse Station

This task fills the outside rinse wells with liquid from the pump reservoir.

Disposable Tips Tasks Table *(Page 2 of 3)*

Disposable Tips Tasks (Continued)

Rinse Tip Holders

This task rinses the inside and outside of the tip holders.

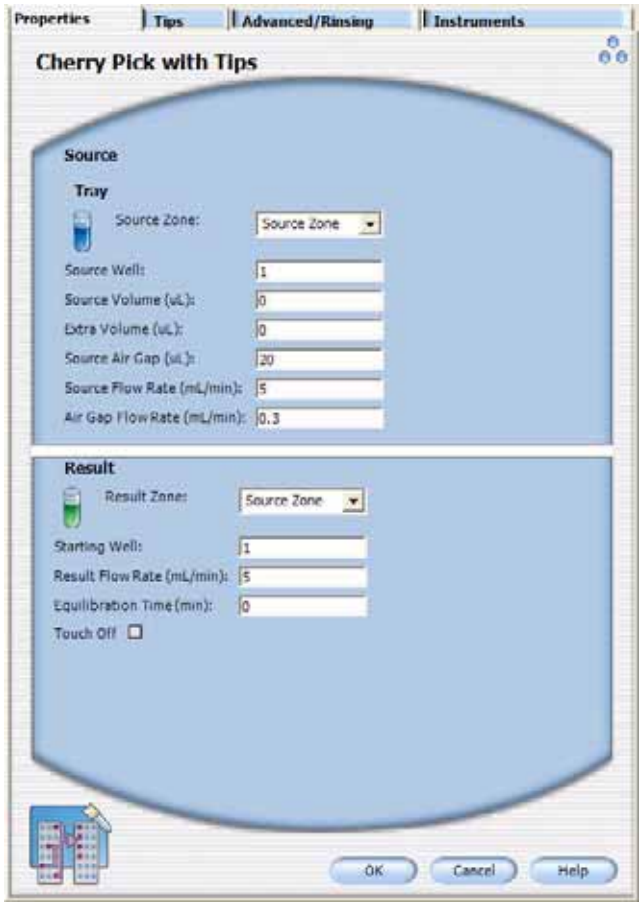
Transfer with Tips

This task aspirates the specified volume of liquid (source) from the reservoir or tray and then dispenses the volume to the wells of the result zone.

Disposable Tips Tasks Table *(Page 3 of 3)*

Cherry Pick with Tips

This task transfers liquid (source) from wells in the source zone to a sequence of wells (beginning with the starting well) in the result zone.



For more information about the properties on each tab, see:

Cherry Pick with Tips - Properties on page C-6

Cherry Pick with Tips - Tips on page C-7

Cherry Pick with Tips - Advanced/Rinsing on page C-9

Cherry Pick with Tips - Instruments on page C-11

Cherry Pick with Tips - Sequence of Steps on page C-12

Cherry Pick with Tips - Properties

Property Name	*Brief Description*	*Default Value*
Source Zone	The zone from which the Source Volume is drawn.	
Source Well	The well in the Source Zone from which the Source Volume is drawn.	1
Source Volume	The quantity of a sample.	0 uL
Extra Volume	An additional volume to the Source Volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/reservoir solvent and the Source Volume.	0 uL
Source Air Gap	The quantity of the air gap aspirated before the Source Volume.	20 uL
Source Flow Rate	The speed at which the Source Volume and Extra Volume move into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	5 mL/min
Air Gap Flow Rate	The speed at which the Source Air Gap moves into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	0.3 mL/min
Result Zone	The zone to which the Source Volume is delivered.	
Starting Well	Type #x where x is a variable value defined in the Sample List. If a variable is not specified, all four probes will go to well 1.	1
Result Flow Rate	The speed at which the Source Volume moves out of the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	5 mL/min

Cherry Pick with Tips - Properties Table *(Page 1 of 2)*

Cherry Pick with Tips - Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Equilibration Time	Time the program waits after dispense before moving out of the well.	0 min
Touch Off	Select Touch Off to activate the Side or Surface Touch Off on the Tips tab.	Cleared

Cherry Pick with Tips - Properties Table *(Page 2 of 2)*

Cherry Pick with Tips - Tips

Property Name	*Brief Description*	*Default Value*
Tip Waste Zone	The zone assigned to the tip chute at which the tips are ejected.	
Load Tips Before Task	Select and tips will be loaded at the beginning of the task. Clear and tips will not be loaded. If tips were previously loaded by another task, clear this option.	Selected
Eject Tips After Task	Select and all tips will be ejected before the rinses. Clear and the tips will remain loaded.	Selected
Prewet Tip	Select this option to wet the tip before aspirating the Source Volume (1st Iteration only).	Cleared
Prewet Volume	The quantity of liquid (source) aspirated and dispensed to prewet the tip when Prewet Tip has been selected.	10 uL
Touch Off Mode	Used when Touch Off was selected on the Properties tab; select Side or Surface touch off.	Surface

Cherry Pick with Tips - Tips Table *(Page 1 of 3)*

Cherry Pick with Tips - Tips (Continued)

Property Name	*Brief Description*	*Default Value*
Touch Off Mode, Surface Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from an auto-calculated position to which the tip will move when performing a surface Touch Off. Auto-calculated position is at the liquid level, which is determined using the initial volume from the Sample List and the well dimensions from the Bed Layout.	0 mm
Touch Off Mode, Side X Offset	The distance right (when a positive number is entered) or left (when a negative number is entered) from the edge of the tube that the tip will move when performing a side Touch Off.	0 mm
Touch Off Mode, Side Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Top that the tip will move when performing a side Rinse Touch Off.	0 mm
Rinse Touch Off Mode	Select Side, Surface, or None (no rinse touch off performed).	None
Rinse Touch Off Mode, Side Y Offset	The distance forward (when a positive number is entered) or backward (when a negative number is entered) from a position that is 1.5 mm forward from the center of the inside rinse well that the tip will move when performing a side Rinse Touch Off.	0 mm

Cherry Pick with Tips - Tips Table *(Page 2 of 3)*

Cherry Pick with Tips - Tips (Continued)

Property Name	*Brief Description*	*Default Value*
Rinse Touch Off Mode, Side Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Top that the tip will move when performing a side Rinse Touch Off.	0 mm
Rinse Touch Off Mode, Surface Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from an auto-calculated position to which the tip will move when performing a surface Rinse Touch Off. Auto-calculated position is at the liquid level, which is determined using the initial volume from the Sample List and the well dimensions from the Bed Layout.	1 mm

Cherry Pick with Tips - Tips Table *(Page 3 of 3)*

Cherry Pick with Tips - Advanced/Rinsing

Property Name	*Brief Description*	*Default Value*
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated and up while it is dispensed. This selection changes the reference point for the Source Height and Result Height to the liquid surface. Initial Volumes should be set in the Sample List when using this option.	Active
Source Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from a defined reference point (Tube Bottom unless Liquid Level Following is selected) when aspirating the Source Volume.	-2 mm

Cherry Pick with Tips - Advanced/Rinsing Table *(Page 1 of 3)*

Cherry Pick with Tips - Advanced/Rinsing (Continued)

Property Name	*Brief Description*	*Default Value*
Result Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the defined reference point (Tube Bottom unless Liquid Level Following is selected) when delivering to the Result Zone.	2 mm
Inside Rinse Zone	The zone to which the Inside Volume is delivered.	Inside Rinse
Outside Rinse Zone	The zone to which the Outside Volume is delivered.	Outside Rinse
Inside Volume	The quantity of liquid used to rinse the inside of the probe. No rinse is performed when the Inside Volume is 0.	0 uL
Inside Flow Rate	The speed at which the Inside Volume moves out of the probe and into the inside rinse position in the rinse station. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	10 mL/min
Outside Volume	The quantity of liquid used to rinse the outside of the probe. No rinse is performed when the Outside Volume is 0.	0 uL
Outside Flow Rate	The speed at which the Outside Volume moves out of the probe and into the outside rinse position in the rinse station. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	10 mL/min

Cherry Pick with Tips - Advanced/Rinsing Table *(Page 2 of 3)*

Cherry Pick with Tips - Advanced/Rinsing (Continued)

Property Name	*Brief Description*	*Default Value*
Inside Rinse Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Bottom for rinsing the probe at the inside rinse position in the rinse station.	8 mm
Outside Rinse Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Bottom for rinsing the probe at the outside rinse position in the rinse station.	8 mm

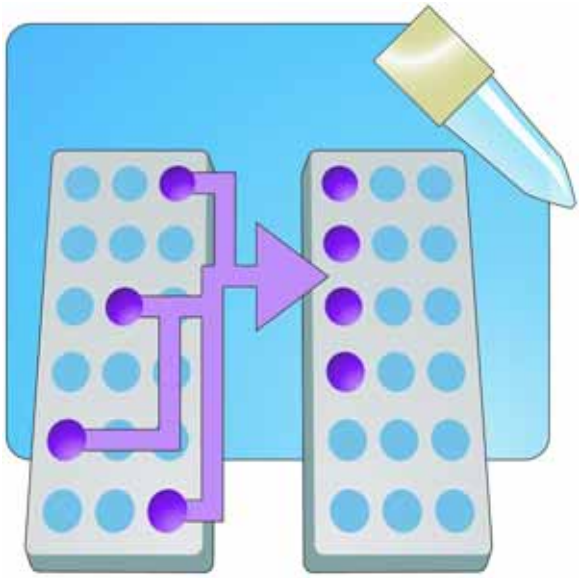
Cherry Pick with Tips - Advanced/Rinsing Table *(Page 3 of 3)*

Cherry Pick with Tips - Instruments

Property Name	*Brief Description*	*Default Value*
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump or VPS that the task will affect.	

Cherry Pick with Tips - Instruments

Cherry Pick with Tips - Sequence of Steps



The following is an overview for the sequence of steps.

1 **Load Tips (Optional)** on page C-12
2 **Aspirate** on page C-12
3 **Dispense** on page C-13
4 **Eject Tips (Optional)** on page C-15
5 **Inside Rinse (Optional)** on page C-15
6 **Outside Rinse (Optional)** on page C-16
7 **Rinse Touch Off** on page C-16

LOAD TIPS (OPTIONAL)

1 Move Z to top
2 If Load Tips before Task = TRUE, load tips

ASPIRATE

if Extra Volume = 0

1 Aspirate Source Air Gap at Air Gap Flow Rate
2 Move probe to Source Well in Source Zone
3 Lower probe into well to Source Height
4 Prewet Tips (Optional)
   a) If Prewet Tip = TRUE
      1) Aspirate Prewet Volume at Source Flow Rate using Liquid Level Following, if selected
      2) Dispense Prewet Volume at Result Flow Rate using Liquid Level Following, if selected

b) If Prewet Tip=FALSE

1) Skip to step 5

5 Aspirate Source Volume at Source Flow Rate using Liquid Level Following, if selected

6 Move Z to top

if Extra Volume > 0

1 Aspirate Source Air Gap at Air Gap Flow Rate

2 Move to Source Well in Source Zone

3 Lower probe into well to Source Height

4 Prewet Tips (only 1st Iteration)

a) If Prewet Tip = TRUE

1) Aspirate Prewet Volume at Source Flow Rate using Liquid Level Following, if selected

2) Dispense Prewet Volume at Result Flow Rate using Liquid Level Following, if selected

b) If Prewet Tip=FALSE

1) Skip to step 5

5 Aspirate Source Volume + Extra Volume at Source Flow Rate using Liquid Level Following, if selected

6 Move Z to top

DISPENSE

if Extra Volume = 0

1 Move probe to Starting Well in Result Zone

2 Lower probe into well to Result Height

3 Dispense Source Volume at Result Flow Rate using Liquid Level Following, if selected

4 Dispense Source Air Gap at Result Flow Rate
5 Wait Equilibration Time
6 If Touch Off = TRUE
   a) If Side Touch Off
      1) Move probe to Side Z Offset
      2) Move probe to edge of well
      3) Move probe to Side X Offset
      4) Move probe to center of well
      5) Move Z to top
   b) If Surface Touch Off
      1) Move probe to Side Z Offset
      2) Move Z to top
7 If Source Volume is greater than tip volume, repeat aspirate and dispense until Source Volume is delivered

if Extra Volume > 0

1 Move probe to Starting Well in Result Zone
2 Lower probe into well to Result Height
3 Dispense Source Volume at Result Flow Rate using Liquid Level Following, if selected
4 Wait Equilibration Time
5 If Touch Off = TRUE
   a) If Side Touch Off
      1) Move probe to Side Z Offset
      2) Move probe to edge of well

3) Move probe to Side X Offset
4) Move probe to center of well
5) Move Z to top

b) If Surface Touch Off
1) Move probe to Side Z Offset
2) Move Z to top

6 If Source Volume is greater than tip volume, repeat aspirate (Air Gap and Extra Volume are not aspirated) and dispense until Source Volume is delivered

7 Move probe to well in Inside Rinse Zone

8 Lower probe into well to Inside Rinse Height

9 Dispense Extra Volume + Source Air Gap at Result Flow Rate

EJECT TIPS (OPTIONAL)

If Eject Tips After Task = TRUE

1 Move Z to top

2 Move probe to Tip Waste Zone

3 Eject tips by moving Z to Z Clamp Height

INSIDE RINSE (OPTIONAL)

1 Move Z to top

2 Move probe to well in Inside Rinse Zone

3 Lower probe into well to Inside Rinse Height

4 Aspirate Inside Volume (from Reservoir) at Inside Flow Rate

5 Dispense Inside Volume at Inside Flow Rate
6 Repeat steps 4–5 until Inside Volume delivered

OUTSIDE RINSE (OPTIONAL)

1 Move Z to top
2 Move probe to well in Outside Rinse Zone
3 Lower probe into well to Outside Rinse Height
4 Aspirate Outside Volume (from Reservoir) at Outside Flow Rate
5 Dispense Outside Volume at Outside Flow Rate
6 Repeat steps 4–5 until Outside Volume delivered

RINSE TOUCH OFF

Side

1 Move Z to top
2 Move probe to well in Inside Rinse Zone
3 Move probe to Side Rinse Z Offset
4 Move probe 1.5 mm in the Y direction (forward)
5 Move probe to Side Rinse Y Offset
6 Move probe to the center of the well
7 Move Z to top

Surface

1 Move Z to top
2 Move probe to well in Outside Rinse Zone

3 Move probe to Surface Rinse Z Offset

4 Move Z to top

None

1 Move Z to top

Dispense Random to Random with Tips

This task transfers liquid (source) from wells in the source zone to random wells in the result zone.

For more information about the properties on each tab, see:

Dispense Random to Random with Tips - Properties on page C-19

Dispense Random to Random with Tips - Tips on page C-20

Dispense Random to Random with Tips - Advanced/Rinsing on page C-22

Dispense Random to Random with Tips - Instruments on page C-24

Dispense Random to Random with Tips - Sequence of Steps on page C-25

Dispense Random to Random with Tips - Properties

Property Name	*Brief Description*	*Default Value*
Source Zone	The zone from which the Source Volume is drawn.	
Source Well	The well in the Source Zone from which the Source Volume is drawn.	1
Source Volume	The quantity of a sample.	0 uL
Extra Volume	An additional volume to the Source Volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/reservoir solvent and the Source Volume.	0 uL
Source Air Gap	The quantity of the air gap aspirated before the Source Volume.	20 uL
Source Flow Rate	The speed at which the Source Volume and Extra Volume move into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	5 mL/min
Air Gap Flow Rate	The speed at which the Source Air Gap moves into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	0.3 mL/min
Result Zone	The zone to which the Source Volume is delivered.	
Result Well	The well in the Result Zone to which the Source and Solution Volumes are delivered.	1
Result Flow Rate	The speed at which the Solution Volume moves into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	5 mL/min

Dispense Random to Random with Tips - Properties Table *(Page 1 of 2)*

Dispense Random to Random with Tips - Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Equilibration Time	Time the program waits after each aspirate and dispense before moving out of the well.	0 min
Touch Off	Select Touch Off to activate the Side or Surface Touch Off on the Tips tab.	Cleared

Dispense Random to Random with Tips - Properties Table *(Page 2 of 2)*

Dispense Random to Random with Tips - Tips

Property Name	*Brief Description*	*Default Value*
Tip Waste Zone	The zone assigned to the tip chute at which the tips are ejected.	
Load Tips Before Task	Select and tips will be loaded at the beginning of the task. Clear and tips will not be loaded. If tips were previously loaded by another task, clear this option.	Active
Eject Tips After Task	Select and all tips will be ejected before the rinses. Clear and the tips will remain loaded.	Active
Prewet Tip	Select this option to wet the tip before aspirating the Source Volume (1st Iteration only).	Cleared
Prewet Volume	The quantity of liquid (source) aspirated and dispensed to prewet the tip when Prewet Tip has been selected.	10 uL
Touch Off Mode	Used when Touch Off was selected on the Properties tab; select Side or Surface touch off.	Surface

Dispense Random to Random with Tips - Tips Table *(Page 1 of 3)*

Dispense Random to Random with Tips - Tips (Continued)

Property Name	*Brief Description*	*Default Value*
Touch Off Mode, Surface Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from an auto-calculated position to which the tip will move when performing a surface Touch Off. Auto-calculated position is at the liquid level, which is determined using the initial volume from the Sample List and the well dimensions from the Bed Layout.	0 mm
Touch Off Mode, Side X Offset	The distance right (when a positive number is entered) or left (when a negative number is entered) from the edge of the tube that the tip will move when performing a side Touch Off.	0 mm
Touch Off Mode, Side Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Top that the tip will move when performing a side Rinse Touch Off.	0 mm
Rinse Touch Off Mode, Side Y Offset	The distance forward (when a positive number is entered) or backward (when a negative number is entered) from a position that is 1.5 mm forward from the center of the inside rinse well that the tip will move when performing a side Rinse Touch Off.	0 mm

Dispense Random to Random with Tips - Tips Table *(Page 2 of 3)*

Dispense Random to Random with Tips - Tips (Continued)

Property Name	*Brief Description*	*Default Value*
Rinse Touch Off Mode, Side Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Top that the tip will move when performing a side Rinse Touch Off.	0 mm
Rinse Touch Off Mode, Surface Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from an auto-calculated position to which the tip will move when performing a surface Rinse Touch Off. Auto-calculated position is at the liquid level, which is determined using the initial volume from the Sample List and the well dimensions from the Bed Layout.	1 mm

Dispense Random to Random with Tips - Tips Table *(Page 3 of 3)*

Dispense Random to Random with Tips - Advanced/Rinsing

Property Name	*Brief Description*	*Default Value*
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated and up while it is dispensed. This selection changes the reference point for the Source Height and Result Height to the liquid surface. Initial Volumes should be set in the Sample List when using this option.	Active
Source Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from a defined reference point (Tube Bottom unless Liquid Level Following is selected) when aspirating the Source Volume.	-2 mm

Dispense Random to Random with Tips - Advanced/Rinsing Table *(Page 1 of 3)*

Dispense Random to Random with Tips - Advanced/Rinsing (Continued)

Property Name	*Brief Description*	*Default Value*
Result Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the defined reference point (Tube Bottom unless Liquid Level Following is selected) when delivering to the Result Zone.	2 mm
Inside Rinse Zone	The zone to which the Inside Volume is delivered.	Inside Rinse
Outside Rinse Zone	The zone to which the Outside Volume is delivered.	Outside Rinse
Inside Volume	The quantity of liquid used to rinse the inside of the probe. No rinse is performed when the Inside Volume is 0.	0 uL
Inside Flow Rate	The speed at which the Inside Volume moves out of the probe and into the inside rinse position in the rinse station. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	10 mL/min
Outside Volume	The quantity of liquid used to rinse the outside of the probe. No rinse is performed when the Outside Volume is 0.	0 uL
Outside Flow Rate	The speed at which the Outside Volume moves out of the probe and into the outside rinse position in the rinse station. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	10 mL/min

Dispense Random to Random with Tips - Advanced/Rinsing Table *(Page 2 of 3)*

Dispense Random to Random with Tips - Advanced/Rinsing (Continued)

Property Name	*Brief Description*	*Default Value*
Inside Rinse Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Bottom for rinsing the probe at the inside rinse position in the rinse station.	8 mm
Outside Rinse Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Bottom for rinsing the probe at the outside rinse position in the rinse station.	8 mm

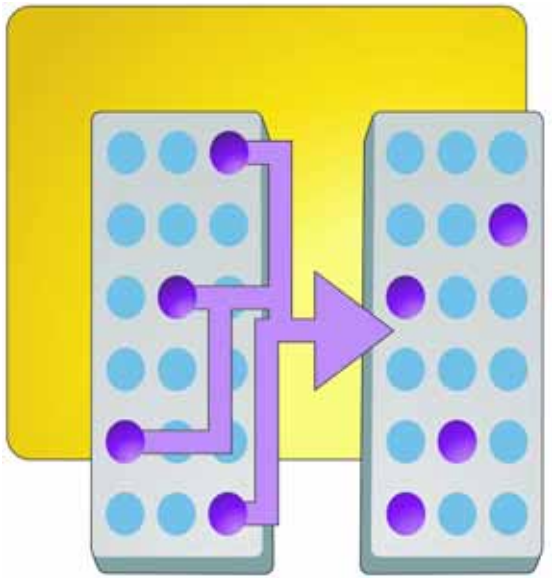
Dispense Random to Random with Tips - Advanced/Rinsing Table *(Page 3 of 3)*

Dispense Random to Random with Tips - Instruments

Property Name	*Brief Description*	*Default Value*
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump or VPS that the task will affect.	

Dispense Random to Random with Tips - Instruments

Dispense Random to Random with Tips - Sequence of Steps



The following is an overview for the sequence of steps.

1 **Load Tips (Optional)** on page C-25
2 **Aspirate** on page C-25
3 **Dispense** on page C-26
4 **Eject Tips (Optional)** on page C-28
5 **Inside Rinse (Optional)** on page C-28
6 **Outside Rinse (Optional)** on page C-29
7 **Rinse Touch Off** on page C-29

LOAD TIPS (OPTIONAL)

1 Move Z to top
2 If Load Tips before Task = TRUE, load tips

ASPIRATE

if Extra Volume = 0

1 Aspirate Source Air Gap at Air Gap Flow Rate
2 Move probe to Source Well in Source Zone
3 Lower probe into well to Source Height
4 Prewet Tips (Optional)
   a) If Prewet Tip = TRUE
      1) Aspirate Prewet Volume at Source Flow Rate using Liquid Level Following, if selected
      2) Dispense Prewet Volume at Result Flow Rate using Liquid Level Following, if selected

b) If Prewet Tip=FALSE

1) Skip to step 5

5 Aspirate Source Volume at Source Flow Rate using Liquid Level Following, if selected

6 Move Z to top

if Extra Volume > 0

1 Aspirate Source Air Gap at Air Gap Flow Rate

2 Move to Source Well in Source Zone

3 Lower probe into well to Source Height

4 Prewet Tips (only 1st Iteration)

a) If Prewet Tip = TRUE

1) Aspirate Prewet Volume at Source Flow Rate using Liquid Level Following, if selected

2) Dispense Prewet Volume at Result Flow Rate using Liquid Level Following, if selected

b) If Prewet Tip=FALSE

1) Skip to step 5

5 Aspirate Source Volume + Extra Volume at Source Flow Rate using Liquid Level Following, if selected

6 Move Z to top

DISPENSE

if Extra Volume = 0

1 Move probe to Starting Well in Result Zone

2 Lower probe into well to Result Height

3 Dispense Source Volume at Result Flow Rate using Liquid Level Following, if selected

4 Dispense Source Air Gap at Result Flow Rate
5 Wait Equilibration Time
6 If Touch Off = TRUE
   a) If Side Touch Off
      1) Move probe to Side Z Offset
      2) Move probe to edge of well
      3) Move probe to Side X Offset
      4) Move probe to center of well
      5) Move Z to top
   b) If Surface Touch Off
      1) Move probe to Side Z Offset
      2) Move Z to top
7 If Source Volume is greater than tip volume, repeat aspirate and dispense until Source Volume is delivered

if Extra Volume > 0

1 Move probe to Starting Well in Result Zone
2 Lower probe into well to Result Height
3 Dispense Source Volume at Result Flow Rate using Liquid Level Following, if selected
4 Wait Equilibration Time
5 If Touch Off = TRUE
   a) If Side Touch Off
      1) Move probe to Side Z Offset
      2) Move probe to edge of well

3) Move probe to Side X Offset
4) Move probe to center of well
5) Move Z to top

b) If Surface Touch Off
1) Move probe to Side Z Offset
2) Move Z to top

6 If Source Volume is greater than tip volume, repeat aspirate (Air Gap and Extra Volume are not aspirated) and dispense until Source Volume is delivered

7 Move probe to well in Inside Rinse Zone

8 Lower probe into well to Inside Rinse Height

9 Dispense Extra Volume + Source Air Gap at Result Flow Rate

EJECT TIPS (OPTIONAL)

If Eject Tips After Task = TRUE

1 Move Z to top

2 Move probe to Tip Waste Zone

3 Eject tips by moving Z to Z Clamp Height

INSIDE RINSE (OPTIONAL)

1 Move Z to top

2 Move probe to well in Inside Rinse Zone

3 Lower probe into well to Inside Rinse Height

4 Aspirate Inside Volume (from Reservoir) at Inside Flow Rate

5 Dispense Inside Volume at Inside Flow Rate
6 Repeat steps 4–5 until Inside Volume delivered

OUTSIDE RINSE (OPTIONAL)

1 Move Z to top
2 Move probe to well in Outside Rinse Zone
3 Lower probe into well to Outside Rinse Height
4 Aspirate Outside Volume (from Reservoir) at Outside Flow Rate
5 Dispense Outside Volume at Outside Flow Rate
6 Repeat steps 4–5 until Outside Volume delivered

RINSE TOUCH OFF

Side

1 Move Z to top
2 Move probe to well in Inside Rinse Zone
3 Move probe to Side Rinse Z Offset
4 Move probe 1.5 mm in the Y direction (forward)
5 Move probe to Side Rinse Y Offset
6 Move probe to the center of the well
7 Move Z to top

Surface

1 Move Z to top
2 Move probe to well in Outside Rinse Zone

3 Move probe to Surface Rinse Z Offset

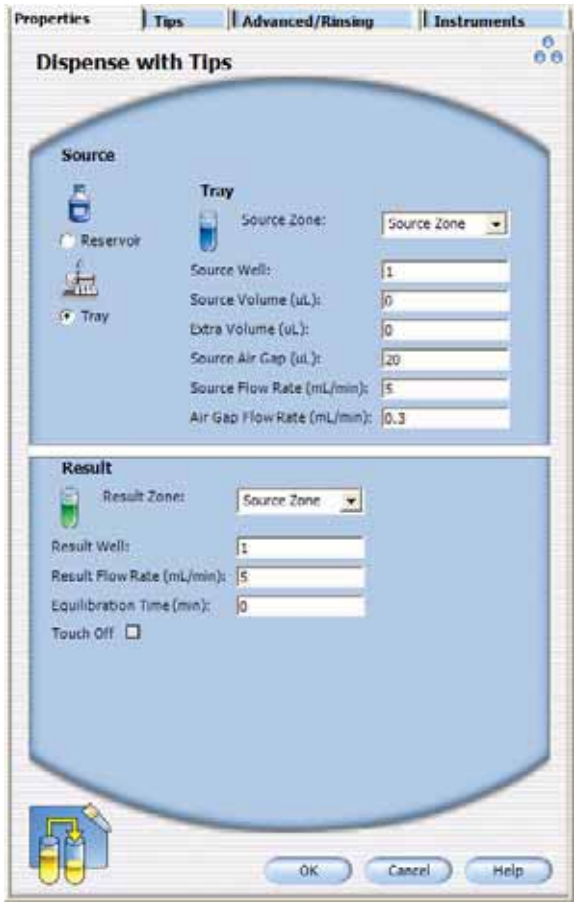
4 Move Z to top

None

1 Move Z to top

Dispense with Tips

This task aspirates the specified volume of liquid (source) from the reservoir or tray and then dispenses the volume to the wells of the result zone.



For more information about the properties on each tab, see:

Dispense with Tips - Properties on page C-32

Dispense with Tips - Tips on page C-33

Dispense with Tips - Advanced/Rinsing on page C-36

Dispense with Tips - Instruments on page C-37

Dispense with Tips - Sequence of Steps on page C-38

Dispense with Tips - Properties

Property Name	*Brief Description*	*Default Value*
Source	Select Reservoir or Tray.	Tray
Tray Source Zone	The zone from which the Source Volume is drawn.	
Tray Source Well	The well in the Source Zone from which the Source Volume is drawn.	1
Tray Source Volume	The quantity of a sample.	0 uL
Tray Extra Volume	An additional volume to the Source Volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/reservoir solvent and the Source Volume.	0 uL
Tray Source Air Gap	The quantity of the air gap aspirated before the Source Volume.	20 uL
Tray Source Flow Rate	The speed at which the Source Volume and Extra Volume move into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	5 mL/min
Tray Air Gap Flow Rate	The speed at which the Source Air Gap moves into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	0.3 mL/min
Reservoir Source Volume	The quantity of a sample.	0 uL

Dispense with Tips - Properties Table *(Page 1 of 2)*

Dispense with Tips - Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Reservoir Source Flow Rate	The speed at which the Source Volume and Extra Volume move into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	10 mL/min
Result Zone	The zone to which the Source Volume is delivered.	
Result Well	The well in the Result Zone to which the Source and Solution Volumes are delivered.	1
Result Flow Rate	The speed at which the Source Volume moves out of the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	5 mL/min
Equilibration Time	Time the program waits after each aspirate and dispense before moving out of the well.	0 min
Touch Off	Select Touch Off to activate the Side or Surface Touch Off on the Tips tab.	Cleared

Dispense with Tips - Properties Table *(Page 2 of 2)*

Dispense with Tips - Tips

Property Name	*Brief Description*	*Default Value*
Tip Waste Zone	The zone assigned to the tip chute at which the tips are ejected.	
Load Tips Before Task	Select and tips will be loaded at the beginning of the task. Clear and tips will not be loaded. If tips were previously loaded by another task, clear this option.	Active

Dispense with Tips - Tips Table *(Page 1 of 3)*

Dispense with Tips - Tips (Continued)

Property Name	*Brief Description*	*Default Value*
Eject Tips After Task	Select and all tips will be ejected before the rinses. Clear and the tips will remain loaded.	Active
Prewet Tip	Select this option to wet the tip before aspirating the Source Volume (1st Iteration only).	Cleared
Prewet Volume	The quantity of liquid (source) aspirated and dispensed to prewet the tip when Prewet Tip has been selected.	10 uL
Touch Off Mode	Used when Touch Off was selected on the Properties tab; select Side or Surface touch off.	Surface
Touch Off Mode, Surface Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from an auto-calculated position to which the tip will move when performing a surface Touch Off. Auto-calculated position is at the liquid level, which is determined using the initial volume from the Sample List and the well dimensions from the Bed Layout.	0 mm
Touch Off Mode, Side X Offset	The distance right (when a positive number is entered) or left (when a negative number is entered) from the edge of the tube that the tip will move when performing a side Touch Off.	0 mm
Touch Off Mode, Side Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Top that the tip will move when performing a side Rinse Touch Off.	0 mm

Dispense with Tips - Tips Table *(Page 2 of 3)*

Dispense with Tips - Tips (Continued)

Property Name	*Brief Description*	*Default Value*
Rinse Touch Off Mode, Side Y Offset	The distance forward (when a positive number is entered) or backward (when a negative number is entered) from a position that is 1.5 mm forward from the center of the inside rinse well that the tip will move when performing a side Rinse Touch Off.	0 mm
Rinse Touch Off Mode, Side Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Top that the tip will move when performing a side Rinse Touch Off.	0 mm
Rinse Touch Off Mode, Surface Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from an auto-calculated position to which the tip will move when performing a surface Rinse Touch Off. Auto-calculated position is at the liquid level, which is determined using the initial volume from the Sample List and the well dimensions from the Bed Layout.	1 mm

Dispense with Tips - Tips Table *(Page 3 of 3)*

Dispense with Tips - Advanced/Rinsing

Property Name	*Brief Description*	*Default Value*
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated and up while it is dispensed. This selection changes the reference point for the Source Height and Result Height to the liquid surface. Initial Volumes should be set in the Sample List when using this option.	Active
Source Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from a defined reference point (Tube Bottom unless Liquid Level Following is selected) when aspirating the Source Volume.	-2 mm
Result Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the defined reference point (Tube Bottom unless Liquid Level Following is selected) when delivering to the Result Zone.	2 mm
Inside Rinse Zone	The zone to which the Inside Volume is delivered.	Inside Rinse
Outside Rinse Zone	The zone to which the Outside Volume is delivered.	Outside Rinse
Inside Volume	The quantity of liquid used to rinse the inside of the probe. No rinse is performed when the Inside Volume is 0.	0 uL
Inside Flow Rate	The speed at which the Inside Volume moves out of the probe and into the inside rinse position in the rinse station. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	10 mL/min
Outside Volume	The quantity of liquid used to rinse the outside of the probe. No rinse is performed when the Outside Volume is 0.	0 uL

Dispense with Tips - Advanced/Rinsing Table *(Page 1 of 2)*

Dispense with Tips - Advanced/Rinsing (Continued)

Property Name	*Brief Description*	*Default Value*
Outside Flow Rate	The speed at which the Outside Volume moves out of the probe and into the outside rinse position in the rinse station. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	10 mL/min
Inside Rinse Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Bottom for rinsing the probe at the inside rinse position in the rinse station.	8 mm
Outside Rinse Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Bottom for rinsing the probe at the outside rinse position in the rinse station.	8 mm

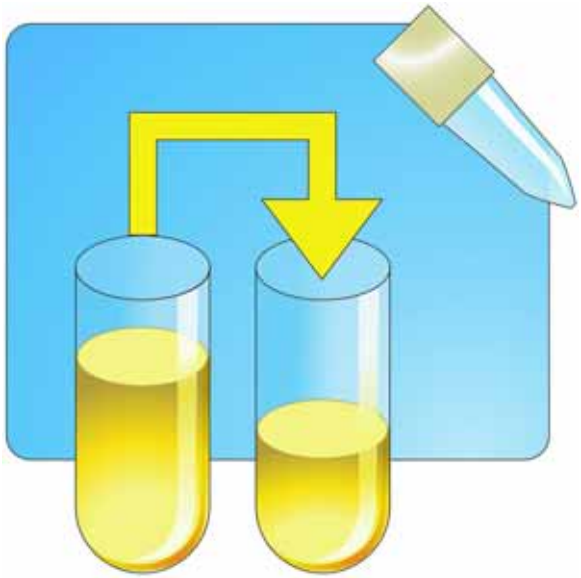
Dispense with Tips - Advanced/Rinsing Table *(Page 2 of 2)*

Dispense with Tips - Instruments

Property Name	*Brief Description*	*Default Value*
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump or VPS that the task will affect.	

Dispense with Tips - Instruments

Dispense with Tips - Sequence of Steps



The following is an overview for the sequence of steps.

1 **Load Tips (Optional)** on page C-38
2 **Aspirate** on page C-38
3 **Dispense** on page C-40
4 **Eject Tips (Optional)** on page C-42
5 **Inside Rinse (Optional)** on page C-43
6 **Outside Rinse (Optional)** on page C-43
7 **Rinse Touch Off** on page C-43

LOAD TIPS (OPTIONAL)

1 Move Z to top
2 If Load Tips before Task = TRUE, load tips

ASPIRATE

Reservoir

1 Move Z to top
2 Move probe to Result Well in Result Zone
3 Lower probe into well to Result Height
4 Aspirate Source Volume (from Reservoir) at Source Flow Rate

Tray (if Extra Volume = 0)

1 Aspirate Source Air Gap at Air Gap Flow Rate
2 Move probe to Source Well in Source Zone
3 Lower probe into well to Source Height
4 Prewet Tips (only 1st Iteration)
   a) If Prewet Tip = TRUE
      1) Aspirate Prewet Volume at Source Flow Rate using Liquid Level Following, if selected
      2) Dispense Prewet Volume at Result Flow Rate using Liquid Level Following, if selected
   b) If Prewet Tip=FALSE
      1) Skip to step 5
5 Aspirate Source Volume at Source Flow Rate using Liquid Level Following, if selected
6 Move Z to top

Tray (if Extra Volume > 0)

1 Move Z to top
2 Aspirate Source Air Gap at Air Gap Flow Rate
3 Move probe to Source Well in Source Zone
4 Lower probe into well to Source Height
5 Prewet Tips (only 1st Iteration)
   a) If Prewet Tip = TRUE
      1) Aspirate Prewet Volume at Source Flow Rate using Liquid Level Following, if selected
      2) Dispense Prewet Volume at Result Flow Rate using Liquid Level Following, if selected

b) If Prewet Tip=FALSE

1) Skip to step 5

6 Aspirate Source Volume + Extra Volume at Source Flow Rate using Liquid Level Following, if selected

7 Move Z to top

DISPENSE

Reservoir

1 Dispense Source Volume at Result Flow Rate using Liquid Level Following, if selected

2 If Source Volume is greater than tip volume, repeat Aspirate step 4 and Dispense step 1 until Source Volume is dispensed

3 Wait Equilibration Time

4 If Touch Off = TRUE

a) If Side Touch Off

1) Move probe to Side Z Offset

2) Move probe to edge of well

3) Move probe to Side X Offset

4) Move probe to center of well

5) Move Z to top

b) If Surface Touch Off

1) Move probe to Side Z Offset

2) Move Z to top

Tray (if Extra Volume = 0)

1 Move probe to Result Well in Result Zone
2 Lower probe into well to Result Height
3 Dispense Source Volume at Result Flow Rate using Liquid Level Following, if selected
4 Dispense Source Air Gap at Result Flow Rate
5 Wait Equilibration Time
6 If Touch Off = TRUE
   a) If Side Touch Off
      1) Move probe to Side Z Offset
      2) Move probe to edge of well
      3) Move probe to Side X Offset
      4) Move probe to center of well
      5) Move Z to top
   b) If Surface Touch Off
      1) Move probe to Side Z Offset
      2) Move Z to top
7 If Source Volume is greater than tip volume, repeat aspirate and dispense until Source Volume is delivered

Tray (if Extra Volume >0)

1 Move probe to Result Well in Result Zone
2 Lower probe into well to Result Height
3 Dispense Source Volume at Result Flow Rate using Liquid Level Following, if selected
4 Wait Equilibration Time

5 If Touch Off = TRUE
   a) If Side Touch Off
      1) Move probe to Side Z Offset
      2) Move probe to edge of well
      3) Move probe to Side X Offset
      4) Move probe to center of well
      5) Move Z to top
   b) If Surface Touch Off
      1) Move probe to Side Z Offset
      2) Move Z to top
6 If Source Volume is greater than tip volume, repeat aspirate (Air Gap and Extra Volume are not aspirated) and dispense until Source Volume is delivered
7 Move probe to well in Inside Rinse Zone
8 Lower probe into well to Inside Rinse Height
9 Dispense Extra Volume + Source Air Gap at Result Flow Rate

EJECT TIPS (OPTIONAL)

If Eject Tips After Task = TRUE

1 Move Z to top
2 Move probe to Tip Waste Zone
3 Eject tips by moving Z to Z Clamp Height

INSIDE RINSE (OPTIONAL)

1 Move Z to top
2 Move probe to well in Inside Rinse Zone
3 Lower probe into well to Inside Rinse Height
4 Aspirate Inside Volume (from Reservoir) at Inside Flow Rate
5 Dispense Inside Volume at Inside Flow Rate
6 Repeat steps 4–5 until Inside Volume delivered

OUTSIDE RINSE (OPTIONAL)

1 Move Z to top
2 Move probe to well in Outside Rinse Zone
3 Lower probe into well to Outside Rinse Height
4 Aspirate Outside Volume (from Reservoir) at Outside Flow Rate
5 Dispense Outside Volume at Outside Flow Rate
6 Repeat steps 4–5 until Outside Volume delivered

RINSE TOUCH OFF

Side

1 Move Z to top
2 Move probe to well in Inside Rinse Zone
3 Move probe to Side Rinse Z Offset
4 Move probe 1.5 mm in the Y direction (forward)
5 Move probe to Side Rinse Y Offset

6 Move probe to the center of the well

7 Move Z to top

Surface

1 Move Z to top

2 Move probe to well in Outside Rinse Zone

3 Move probe to Surface Rinse Z Offset

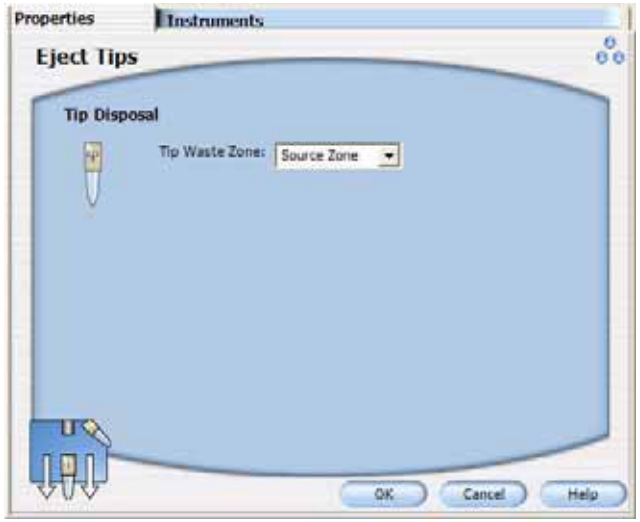
4 Move Z to top

None

1 Move Z to top

Eject Tips

This task ejects tips to the tip waste zone.



For more information about the properties on each tab, see:

Eject Tips - Properties on page C-45

Eject Tips - Instruments on page C-46

Eject Tips - Sequence of Steps on page C-46

Eject Tips - Properties

Property Name	*Brief Description*	*Default Value*
Tip Waste Zone	The zone assigned to the tip chute at which the tips are ejected.	

Eject Tips - Properties

Eject Tips - Instruments

Property Name	*Brief Description*	*Default Value*
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump or VPS that the task will affect.	

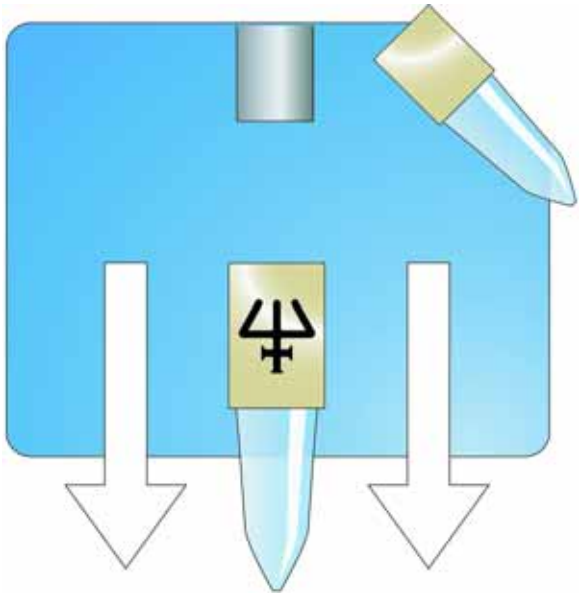
Eject Tips - Instruments

Eject Tips - Sequence of Steps

1 Move Z to top

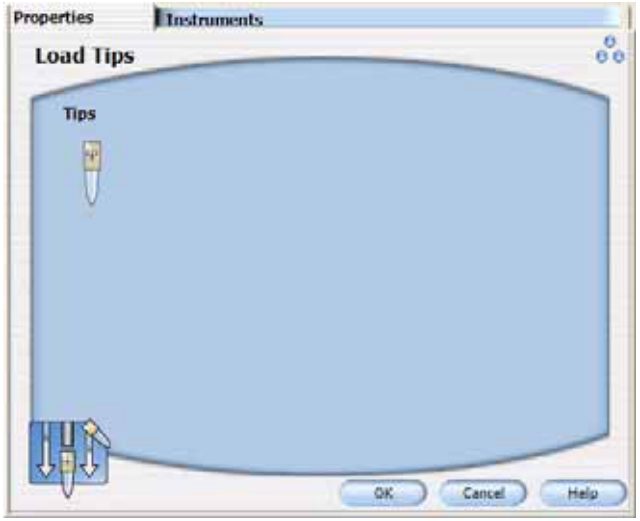
2 Move probe to well in Tip Waste Zone

3 Eject tips by moving Z to Z Clamp Height



Load Tips

This task loads tips.



For more information about the properties on each tab, see:

Load Tips - Instruments on page C-47

Load Tips - Sequence of Steps on page C-48

Load Tips - Instruments

Property Name	*Brief Description*	*Default Value*
Liquid Handler	The liquid handler that the task will affect.	

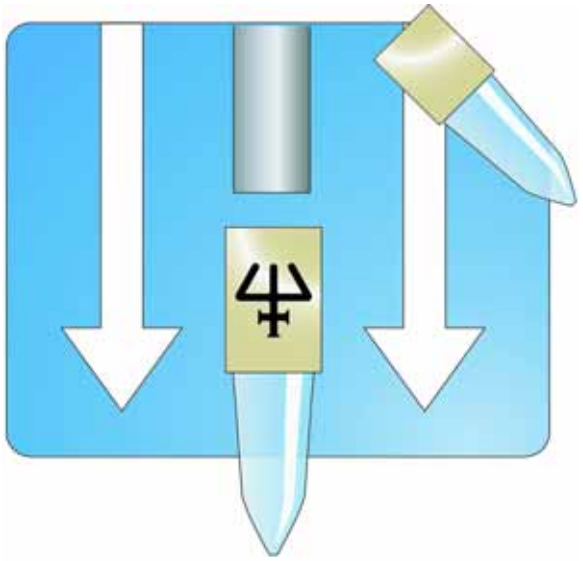
Load Tips - Instruments

Load Tips - Sequence of Steps

1 Move Z to top

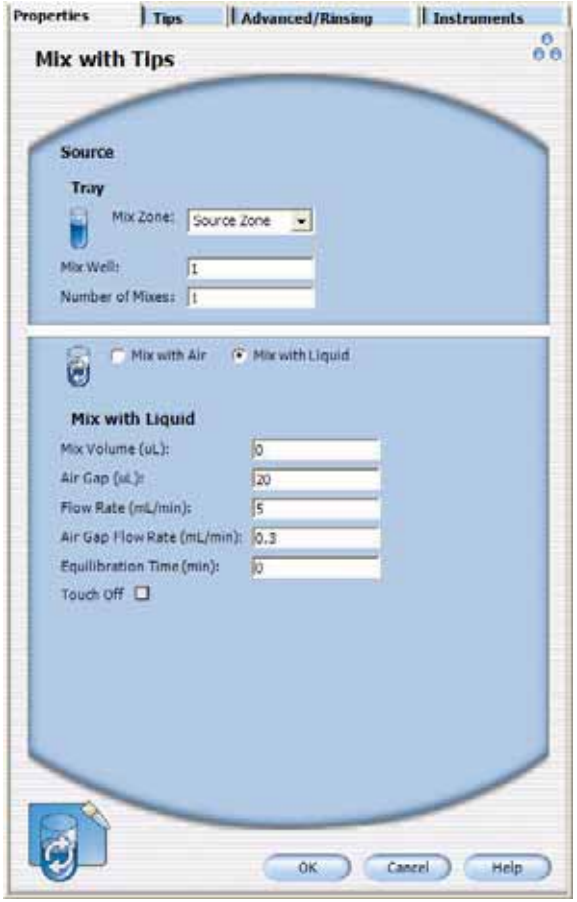
2 If Load Tips before Task = TRUE, load tips

Note: If tips are already loaded, no tips will be installed.



Mix with Tips

This task aspirates air or liquid and then dispenses it into a well a specified number of times.



For more information about the properties on each tab, see:

Mix with Tips - Properties on page C-50

Mix with Tips - Tips on page C-52

Mix with Tips - Advanced/Rinsing on page C-54

Mix with Tips - Instruments on page C-55

Mix with Tips - Sequence of Steps on page C-56

Mix with Tips - Properties

Property Name	*Brief Description*	*Default Value*
Mix Zone	The zone in which the Mixing Volume is mixed.	
Mix Well	The well in the Mix Zone in which the mix is performed. Type #x where x is a variable value defined in the Sample List. If a variable is not specified, all four probes will go to well 1.	1
Number of Mixes	Type the number of times the Task should repeat the commands related to mixing.	1
Mix with Air/Mix with Liquid	Select Mix with Air or Mix with Liquid.	Mix with Liquid
Mix with Liquid Mix Volume	The quantity of liquid used as part of a mixing process.	0 uL
Mix with Liquid Air Gap	The quantity of an air gap.	20 uL
Mix with Liquid Flow Rate	The speed at which the Mixing Volume moves into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	5 mL/min
Mix with Liquid Air Gap Flow Rate	The speed at which the Air Gap Volume moves into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	0.3 mL/min

Mix with Tips - Properties Table *(Page 1 of 2)*

Mix with Tips - Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Mix with Liquid Equilibration Time	Time the program waits after each aspirate and dispense before moving out of the well.	0 min
Mix with Liquid Touch Off	Select Touch Off to activate the Side or Surface Touch Off within the Tips tab.	
Mix with Air Mix Volume	The quantity of air used as part of a mixing process	0 uL
Mix with Air Air Gap	The quantity of an air gap.	20 uL
Mix with Air Flow Rate	The speed at which the Mix Volume moves into and out of the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	5 mL/min
Mix with Air Equilibration Time	Time the program waits after each aspirate and dispense before moving out of the well.	0 min
Mix with Air Touch Off	Select Touch Off to activate the Side or Surface Touch Off within the Tips tab.	

Mix with Tips - Properties Table *(Page 2 of 2)*

Mix with Tips - Tips

Property Name	*Brief Description*	*Default Value*
Tip Waste Zone	The zone assigned to the tip chute at which the tips are ejected.	
Load Tips Before Task	Select and tips will be loaded at the beginning of the task. Clear and tips will not be loaded. If tips were previously loaded by another task, clear this option.	Active
Eject Tips After Task	Select and all tips will be ejected before the rinses. Clear and the tips will remain loaded.	Active
Prewet Tip	Select this option to wet the tip before aspirating the Source Volume (1st Iteration only).	Cleared
Prewet Volume	The quantity of liquid (source) aspirated and dispensed to prewet the tip when Prewet Tip has been selected.	10 uL
Touch Off Mode	Used when Touch Off was selected on the Properties tab; select Side or Surface touch off.	Surface
Touch Off Mode, Surface Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from an auto-calculated position to which the tip will move when performing a surface Touch Off. Auto-calculated position is at the liquid level, which is determined using the initial volume from the Sample List and the well dimensions from the Bed Layout.	0 mm

Mix with Tips - Tips Table *(Page 1 of 2)*

Mix with Tips - Tips (Continued)

Property Name	*Brief Description*	*Default Value*
Touch Off Mode, Side X Offset	The distance right (when a positive number is entered) or left (when a negative number is entered) from the edge of the tube that the tip will move when performing a side Touch Off.	0 mm
Touch Off Mode, Side Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Top that the tip will move when performing a side Rinse Touch Off.	0 mm
Rinse Touch Off Mode, Side Y Offset	The distance forward (when a positive number is entered) or backward (when a negative number is entered) from a position that is 1.5 mm forward from the center of the inside rinse well that the tip will move when performing a side Rinse Touch Off.	0 mm
Rinse Touch Off Mode, Side Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Top that the tip will move when performing a side Rinse Touch Off.	0 mm
Rinse Touch Off Mode, Surface Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from an auto-calculated position to which the tip will move when performing a surface Rinse Touch Off. Auto-calculated position is at the liquid level, which is determined using the initial volume from the Sample List and the well dimensions from the Bed Layout.	1 mm

Mix with Tips - Tips Table *(Page 2 of 2)*

Mix with Tips - Advanced/Rinsing

Property Name	*Brief Description*	*Default Value*
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated and up while it is dispensed. This selection changes the reference point for the Source Height and Result Height to the liquid surface. Initial Volumes should be set in the Sample List when using this option.	Active
Source Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from a defined reference point (Tube Bottom unless Liquid Level Following is selected) when aspirating the Source Volume.	-2 mm
Result Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the defined reference point (Tube Bottom unless Liquid Level Following is selected) when delivering to the Result Zone.	2 mm
Inside Rinse Zone	The zone to which the Inside Volume is delivered.	Inside Rinse
Outside Rinse Zone	The zone to which the Outside Volume is delivered.	Outside Rinse
Inside Volume	The quantity of liquid used to rinse the inside of the probe. No rinse is performed when the Inside Volume is 0.	0
Inside Flow Rate	The speed at which the Inside Volume moves out of the probe and into the inside rinse position in the rinse station. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	10 mL/min
Outside Volume	The quantity of liquid used to rinse the outside of the probe. No rinse is performed when the Outside Volume is 0.	0 uL

Mix with Tips - Advanced/Rinsing Table *(Page 1 of 2)*

Mix with Tips - Advanced/Rinsing (Continued)

Property Name	*Brief Description*	*Default Value*
Outside Flow Rate	The speed at which the Outside Volume moves out of the probe and into the outside rinse position in the rinse station. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	10 mL/min
Inside Rinse Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Bottom for rinsing the probe at the inside rinse position in the rinse station.	8 mm
Outside Rinse Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Bottom for rinsing the probe at the outside rinse position in the rinse station.	8 mm

Mix with Tips - Advanced/Rinsing Table ***(Page 2 of 2)***

Mix with Tips - Instruments

Property Name	*Brief Description*	*Default Value*
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump or VPS that the task will affect.	

Mix with Tips - Instruments

Mix with Tips - Sequence of Steps

The following is an overview for the sequence of steps.

1 **Load Tips (Optional)** on page C-56
2 **Mix with Liquid** on page C-56
3 **Mix with Air** on page C-57
4 **Eject Tips (Optional)** on page C-58
5 **Inside Rinse (Optional)** on page C-58
6 **Outside Rinse (Optional)** on page C-59
7 **Rinse Touch Off** on page C-59

LOAD TIPS (OPTIONAL)

1 Move Z to top
2 If Load Tips before Task = TRUE, load tips

MIX WITH LIQUID

1 Aspirate Air Gap at Air Gap Flow Rate
2 Move to Mix Well in Mix Zone
3 Lower probe into well to Source Height
4 Aspirate Mix Volume at Flow Rate using Liquid Level Following, if selected
5 Lower probe into well to Result Height
6 Dispense Mix Volume at Flow Rate using Liquid Level Following, if selected
7 Wait Equilibration Time

8 Repeat steps 3–7 until Number of Mixes is complete

9 Touch Off (Optional)

   a) If Touch Off = TRUE

      1) Move probe to edge

      2) Move probe to center

      3) Move Z to top

   b) if Touch Off = FALSE

      1) Move Z to top

10 Move probe to well in Inside Rinse Zone

11 Lower probe into well to Inside Rinse Height

12 Dispense Air Gap at Air Gap Flow Rate

MIX WITH AIR

1 Aspirate Air Gap at Flow Rate

2 Move probe to Mix Well in Mix Zone

3 Move Z to top

4 Aspirate Mix Volume in Flow Rate

5 Lower probe into well to Result Height

6 Dispense Mix Volume in Flow Rate

7 Wait Equilibration Time

8 Repeat steps 3–7 until Number of Mixes completes

9 If Touch Off = TRUE
   a) If Side Touch Off
      1) Move probe to Side Z Offset
      2) Move probe to edge of well
      3) Move probe to Side X Offset
      4) Move probe to center of well
      5) Move Z to top
   b) If Surface Touch Off
      1) Move probe to Side Z Offset
      2) Move Z to top
10 Move probe to well in Inside Rinse Zone
11 Lower probe into well to Inside Rinse Height
12 Dispense Air Gap at Flow Rate
13 Move Z to top

EJECT TIPS (OPTIONAL)

If Eject Tips After Task = TRUE

1 Move Z to top
2 Move probe to Tip Waste Zone
3 Eject tips by moving Z to Z Clamp Height

INSIDE RINSE (OPTIONAL)

1 Move Z to top
2 Move probe to well in Inside Rinse Zone

3 Lower probe into well to Inside Rinse Height
4 Aspirate Inside Volume (from Reservoir) at Inside Flow Rate
5 Dispense Inside Volume at Inside Flow Rate
6 Repeat steps 4–5 until Inside Volume delivered

OUTSIDE RINSE (OPTIONAL)

1 Move Z to top
2 Move probe to well in Outside Rinse Zone
3 Lower probe into well to Outside Rinse Height
4 Aspirate Outside Volume (from Reservoir) at Outside Flow Rate
5 Dispense Outside Volume at Outside Flow Rate
6 Repeat steps 4–5 until Outside Volume delivered

RINSE TOUCH OFF

Side

1 Move Z to top
2 Move probe to well in Inside Rinse Zone
3 Move probe to Side Rinse Z Offset
4 Move probe 1.5 mm in the Y direction (forward)
5 Move probe to Side Rinse Y Offset
6 Move probe to the center of the well
7 Move Z to top

Surface

1 Move Z to top
2 Move probe to well in Outside Rinse Zone
3 Move probe to Surface Rinse Z Offset
4 Move Z to top

None

1 Move Z to top

Prime Pump with Tips

This task primes the pump in the specified zone. It aspirates the specified volume (or the syringe capacity) from the reservoir and then dispenses to the wells in the result zone.

For more information about the properties on each tab, see:

Prime Pump with Tips - Properties on page C-62

Prime Pump with Tips - Advanced/Rinsing on page C-62

Prime Pump with Tips- Instruments on page C-64

Prime Pump with Tips - Sequence of Steps on page C-65

Prime Pump with Tips - Properties

Property Name	*Brief Description*	*Default Value*
Source	Source for the Prime Pump is reservoir.	Reservoir
Prime Volume	The quantity of a sample.	0 uL
Source Flow Rate	The speed at which the Source Volume and Extra Volume move into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	10 mL/min
Result Zone	The zone to which the Source Volume are delivered.	Inside Rinse
Result Well	The well in the Result Zone to which the Source and Solution Volumes are delivered.	1
Result Flow Rate	The speed at which the Source Volume moves out of the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	5 mL/min

Prime Pump with Tips - Properties

Prime Pump with Tips - Advanced/Rinsing

Property Name	*Brief Description*	*Default Value*
Result Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the defined reference point (Tube Bottom unless Liquid Level Following is selected) when delivering to the Result Zone.	2 mm
Inside Rinse Zone	The zone to which the Inside Volume is delivered.	Inside Rinse

Prime Pump with Tips - Advanced/Rinsing Table *(Page 1 of 3)*

Prime Pump with Tips - Advanced/Rinsing (Continued)

Property Name	*Brief Description*	*Default Value*
Outside Rinse Zone	The zone to which the Outside Volume is delivered.	Outside Rinse
Inside Volume	The quantity of liquid used to rinse the inside of the probe. No rinse is performed when the Inside Volume is 0.	0 uL
Inside Flow Rate	The speed at which the Inside Volume moves out of the probe and into the inside rinse position in the rinse station. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	10 mL/min
Outside Volume	The quantity of liquid used to rinse the outside of the probe. No rinse is performed when the Outside Volume is 0.	0 uL
Outside Flow Rate	The speed at which the Outside Volume moves out of the probe and into the outside rinse position in the rinse station. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	10 mL/min
Inside Rinse Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Bottom for rinsing the probe at the inside rinse position in the rinse station.	8 mm
Outside Rinse Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Bottom for rinsing the probe at the outside rinse position in the rinse station.	8 mm

Prime Pump with Tips - Advanced/Rinsing Table *(Page 2 of 3)*

Prime Pump with Tips - Advanced/Rinsing (Continued)

Property Name	*Brief Description*	*Default Value*
Rinse Touch Off Mode, Side Y Offset	The distance forward (when a positive number is entered) or backward (when a negative number is entered) from a position that is 1.5 mm forward from the center of the inside rinse well that the tip will move when performing a side Rinse Touch Off.	0 mm
Rinse Touch Off Mode, Side Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Top that the tip will move when performing a side Rinse Touch Off.	0 mm
Rinse Touch Off Mode, Surface Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from an auto-calculated position to which the tip will move when performing a surface Rinse Touch Off. Auto-calculated position is at the liquid level, which is determined using the initial volume from the Sample List and the well dimensions from the Bed Layout.	1 mm

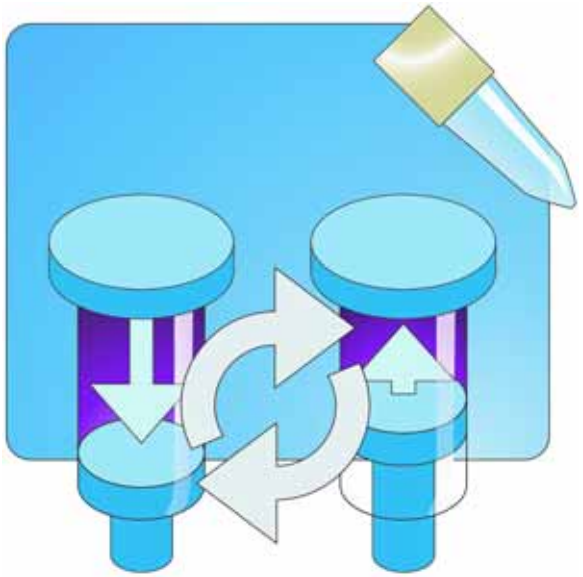
Prime Pump with Tips - Advanced/Rinsing Table *(Page 3 of 3)*

Prime Pump with Tips- Instruments

Property Name	*Brief Description*	*Default Value*
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump or VPS that the task will affect.	

Prime Pump with Tips

Prime Pump with Tips - Sequence of Steps



The following is an overview for the sequence of steps.

1 **Aspirate** on page C-65
2 **Inside Rinse (Optional)** on page C-65
3 **Outside Rinse (Optional)** on page C-66
4 **Rinse Touch Off** on page C-66

ASPIRATE

1 Move Z to top
2 Aspirate the Prime Volume at Source Flow Rate
3 Move probe to Result Well in Result Zone
4 Lower probe into well to Result Height
5 Dispense Prime Volume at Result Flow Rate
6 Move Z to top

INSIDE RINSE (OPTIONAL)

1 Move Z to top
2 Move probe to well in Inside Rinse Zone
3 Lower probe into well to Inside Rinse Height
4 Aspirate Inside Volume (from Reservoir) at Inside Flow Rate
5 Dispense Inside Volume at Inside Flow Rate
6 Repeat steps 4–5 until Inside Volume delivered

OUTSIDE RINSE (OPTIONAL)

1 Move Z to top
2 Move probe to well in Outside Rinse Zone
3 Lower probe into well to Outside Rinse Height
4 Aspirate Outside Volume (from Reservoir) at Outside Flow Rate
5 Dispense Outside Volume at Outside Flow Rate
6 Repeat steps 4–5 until Outside Volume delivered

RINSE TOUCH OFF

Side

1 Move Z to top
2 Move probe to well in Inside Rinse Zone
3 Move probe to Side Rinse Z Offset
4 Move probe 1.5 mm in the Y direction (forward)
5 Move probe to Side Rinse Y Offset
6 Move probe to the center of the well
7 Move Z to top

Surface

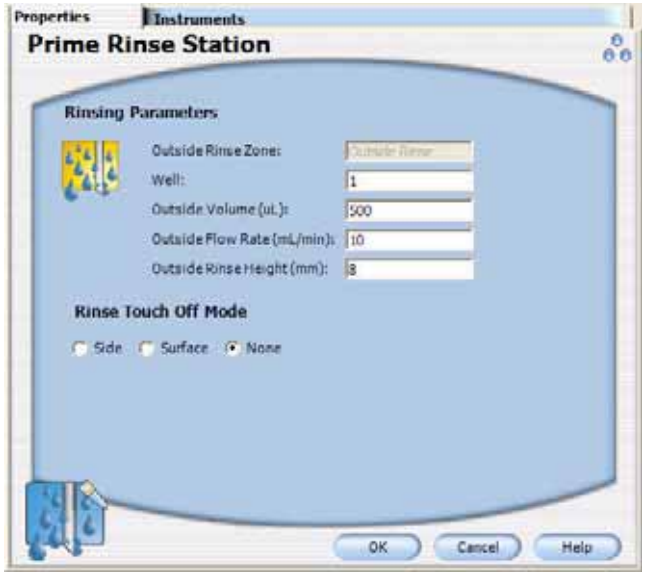
1 Move Z to top
2 Move probe to well in Outside Rinse Zone
3 Move probe to Surface Rinse Z Offset
4 Move Z to top

None

1 Move Z to top

Prime Rinse Station

This task fills the outside rinse wells with liquid from the pump reservoir.



For more information about the properties on each tab, see:

Prime Rinse Station - Properties on page C-68

Prime Rinse Station- Instruments on page C-70

Prime Rinse Station - Sequence of Steps on page C-70

Prime Rinse Station - Properties

Property Name	*Brief Description*	*Default Value*
Outside Rinse Zone	The zone to which the Outside Volume is delivered.	Outside Rinse
Well	Enter the well number in the zone.	1
Outside Volume	The quantity of liquid used to rinse the outside of the probe.	500 uL

Prime Rinse Station Table *(Page 1 of 2)*

Prime Rinse Station - Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Outside Flow Rate	The speed at which the Outside Volume moves out of the probe and into the outside rinse position in the rinse station. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	10 mL/min
Outside Rinse Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Bottom for rinsing the probe at the outside rinse position in the rinse station.	8 mm
Rinse Touch Off Mode, Side Y Offset	The distance forward (when a positive number is entered) or backward (when a negative number is entered) from a position that is 1.5 mm forward from the center of the inside rinse well that the tip will move when performing a side Rinse Touch Off.	0 mm
Rinse Touch Off Mode, Side Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Top that the tip will move when performing a side Rinse Touch Off.	0 mm
Rinse Touch Off Mode, Surface Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from an auto-calculated position to which the tip will move when performing a surface Rinse Touch Off. Auto-calculated position is at the liquid level, which is determined using the initial volume from the Sample List and the well dimensions from the Bed Layout.	1 mm

Prime Rinse Station Table *(Page 2 of 2)*

Prime Rinse Station- Instruments

Property Name	*Brief Description*	*Default Value*
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump or VPS that the task will affect.	

Prime Rinse Station- Instruments

Prime Rinse Station - Sequence of Steps

The following is an overview for the sequence of steps.

1 **Rinse Touch Off** on page C-70

RINSE TOUCH OFF

Side

1 Move Z to top
2 Move probe to well in Inside Rinse Zone
3 Move probe to Side Rinse Z Offset
4 Move probe 1.5 mm in the Y direction (forward)
5 Move probe to Side Rinse Y Offset
6 Move probe to the center of the well
7 Move Z to top

Surface

1 Move Z to top
2 Move probe to well in Outside Rinse Zone
3 Move probe to Surface Rinse Z Offset
4 Move Z to top

None

1 Move Z to top

Rinse Tip Holders

This task rinses the inside and outside of the tip holders.

For more information about the properties on each tab, see:

Rinse Tip Holders - Properties on page C-73

Rinse Tip Holders - Instruments on page C-74

Rinse Tip Holders - Sequence of Steps on page C-75

Rinse Tip Holders - Properties

Property Name	*Brief Description*	*Default Value*
Inside Rinse Zone	The zone to which the Inside Volume is delivered.	Inside Rinse
Outside Rinse Zone	The zone to which the Outside Volume is delivered.	Outside Rinse
Inside Volume	The quantity of liquid used to rinse the inside of the probe. No rinse is performed when the Inside Volume is 0.	0 uL
Inside Flow Rate	The speed at which the Inside Volume moves out of the probe and into the inside rinse position in the rinse station. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	10 mL/min
Outside Volume	The quantity of liquid used to rinse the outside of the probe. No rinse is performed when the Outside Volume is 0.	0 uL
Outside Flow Rate	The speed at which the Outside Volume moves out of the probe and into the outside rinse position in the rinse station. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	10 mL/min
Inside Rinse Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Bottom for rinsing the probe at the inside rinse position in the rinse station.	8 mm
Outside Rinse Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Bottom for rinsing the probe at the outside rinse position in the rinse station.	8 mm

Rinse Tip Holders - Properties Table *(Page 1 of 2)*

Rinse Tip Holders - Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Rinse Touch Off Mode, Side Y Offset	The distance forward (when a positive number is entered) or backward (when a negative number is entered) from a position that is 1.5 mm forward from the center of the inside rinse well that the tip will move when performing a side Rinse Touch Off.	0 mm
Rinse Touch Off Mode, Side Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Top that the tip will move when performing a side Rinse Touch Off.	0 mm
Rinse Touch Off Mode, Surface Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from an auto-calculated position to which the tip will move when performing a surface Rinse Touch Off. Auto-calculated position is at the liquid level, which is determined using the initial volume from the Sample List and the well dimensions from the Bed Layout.	1 mm

Rinse Tip Holders - Properties Table *(Page 2 of 2)*

Rinse Tip Holders - Instruments

Property Name	*Brief Description*	*Default Value*
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump or VPS that the task will affect.	

Rinse Tip Holders - Instruments

Rinse Tip Holders - Sequence of Steps

The following is an overview for the sequence of steps.

1 **Inside Rinse (Optional)** on page C-75
2 **Outside Rinse (Optional)** on page C-75
3 **Rinse Touch Off** on page C-76

INSIDE RINSE (OPTIONAL)

1 Move Z to top
2 Move probe to well in Inside Rinse Zone
3 Lower probe into well to Inside Rinse Height
4 Aspirate Inside Volume (from Reservoir) at Inside Flow Rate
5 Dispense Inside Volume at Inside Flow Rate
6 Repeat steps 4–5 until Inside Volume delivered

OUTSIDE RINSE (OPTIONAL)

1 Move Z to top
2 Move probe to well in Outside Rinse Zone
3 Lower probe into well to Outside Rinse Height
4 Aspirate Outside Volume (from Reservoir) at Outside Flow Rate
5 Dispense Outside Volume at Outside Flow Rate
6 Repeat steps 4–5 until Outside Volume delivered

RINSE TOUCH OFF

Side

1 Move Z to top
2 Move probe to well in Inside Rinse Zone
3 Move probe to Side Rinse Z Offset
4 Move probe 1.5 mm in the Y direction (forward)
5 Move probe to Side Rinse Y Offset
6 Move probe to the center of the well
7 Move Z to top

Surface

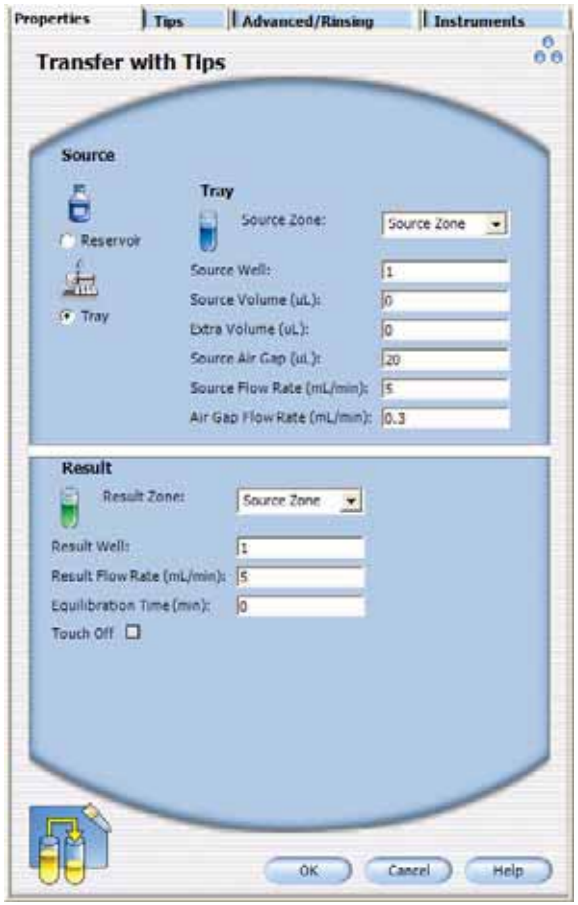
1 Move Z to top
2 Move probe to well in Outside Rinse Zone
3 Move probe to Surface Rinse Z Offset
4 Move Z to top

None

1 Move Z to top

Transfer with Tips

This task aspirates the specified volume of liquid (source) from the reservoir or tray and then dispenses the volume to the wells of the result zone.



For more information about the properties on each tab, see:

Transfer with Tips - Properties on page C-78

Transfer with Tips - Tips on page C-79

Transfer with Tips - Advanced/Rinsing on page C-82

Transfer with Tips - Instruments on page C-83

Transfer with Tips - Sequence of Steps on page C-84

Transfer with Tips - Properties

Property Name	*Brief Description*	*Default Value*
Source	Select Reservoir or Tray.	Tray
Tray Source Zone	The zone from which the Source Volume is drawn.	
Tray Source Well	The well in the Source Zone from which the Source Volume is drawn.	1
Tray Source Volume	The quantity of a sample.	0 uL
Tray Extra Volume	An additional volume to the Source Volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/reservoir solvent and the Source Volume.	0 uL
Tray Source Air Gap	The quantity of the air gap aspirated before the Source Volume.	20 uL
Tray Source Flow Rate	The speed at which the Source Volume and Extra Volume move into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	5 mL/min
Tray Air Gap Flow Rate	The speed at which the Source Air Gap moves into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	0.3 mL/min
Reservoir Source Volume	The quantity of a sample.	0 uL

Transfer with Tips - Properties Table *(Page 1 of 2)*

Transfer with Tips - Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Reservoir Source Flow Rate	The speed at which the Source Volume and Extra Volume move into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	10 mL/min
Result Zone	The zone to which the Source Volume is delivered.	
Result Well	The well in the Result Zone to which the Source and Solution Volumes are delivered.	1
Result Flow Rate	The speed at which the Source Volume moves out of the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	5 mL/min
Equilibration Time	Time the program waits after each aspirate and dispense before moving out of the well.	0 min
Touch Off	Select Touch Off to activate the Side or Surface Touch Off on the Tips tab.	Cleared

Transfer with Tips - Properties Table *(Page 2 of 2)*

Transfer with Tips - Tips

Property Name	*Brief Description*	*Default Value*
Tip Waste Zone	The zone assigned to the tip chute at which the tips are ejected.	
Load Tips Before Task	Select and tips will be loaded at the beginning of the task. Clear and tips will not be loaded. If tips were previously loaded by another task, clear this option.	Active

Transfer with Tips - Tips Table *(Page 1 of 3)*

Transfer with Tips - Tips (Continued)

Property Name	*Brief Description*	*Default Value*
Eject Tips After Task	Select and all tips will be ejected before the rinses. Clear and the tips will remain loaded.	Active
Prewet Tip	Select this option to wet the tip before aspirating the Source Volume (1st Iteration only).	Cleared
Prewet Volume	The quantity of liquid (source) aspirated and dispensed to prewet the tip when Prewet Tip has been selected.	10 uL
Touch Off Mode	Used when Touch Off was selected on the Properties tab; select Side or Surface touch off.	Surface
Touch Off Mode, Surface Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from an auto-calculated position to which the tip will move when performing a surface Touch Off. Auto-calculated position is at the liquid level, which is determined using the initial volume from the Sample List and the well dimensions from the Bed Layout.	0 mm
Touch Off Mode, Side X Offset	The distance right (when a positive number is entered) or left (when a negative number is entered) from the edge of the tube that the tip will move when performing a side Touch Off.	0 mm
Touch Off Mode, Side Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Top that the tip will move when performing a side Rinse Touch Off.	0 mm

Transfer with Tips - Tips Table *(Page 2 of 3)*

Transfer with Tips - Tips (Continued)

Property Name	*Brief Description*	*Default Value*
Rinse Touch Off Mode, Side Y Offset	The distance forward (when a positive number is entered) or backward (when a negative number is entered) from a position that is 1.5 mm forward from the center of the inside rinse well that the tip will move when performing a side Rinse Touch Off.	0 mm
Rinse Touch Off Mode, Side Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Top that the tip will move when performing a side Rinse Touch Off.	0 mm
Rinse Touch Off Mode, Surface Z Offset	The distance up (when a positive number is entered) or down (when a negative number is entered) from an auto-calculated position to which the tip will move when performing a surface Rinse Touch Off. Auto-calculated position is at the liquid level, which is determined using the initial volume from the Sample List and the well dimensions from the Bed Layout.	1 mm

Transfer with Tips - Tips Table *(Page 3 of 3)*

Transfer with Tips - Advanced/Rinsing

Property Name	*Brief Description*	*Default Value*
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated and up while it is dispensed. This selection changes the reference point for the Source Height and Result Height to the liquid surface. Initial Volumes should be set in the Sample List when using this option.	Active
Source Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from a defined reference point (Tube Bottom unless Liquid Level Following is selected) when aspirating the Source Volume.	-2 mm
Result Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the defined reference point (Tube Bottom unless Liquid Level Following is selected) when delivering to the Result Zone.	2 mm
Inside Rinse Zone	The zone to which the Inside Volume is delivered.	Inside Rinse
Outside Rinse Zone	The zone to which the Outside Volume is delivered.	Outside Rinse
Inside Volume	The quantity of liquid used to rinse the inside of the probe. No rinse is performed when the Inside Volume is 0.	0 uL
Inside Flow Rate	The speed at which the Inside Volume moves out of the probe and into the inside rinse position in the rinse station. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	10 mL/min
Outside Volume	The quantity of liquid used to rinse the outside of the probe. No rinse is performed when the Outside Volume is 0.	0 uL

Transfer with Tips - Advanced/Rinsing Table *(Page 1 of 2)*

Transfer with Tips - Advanced/Rinsing (Continued)

Property Name	*Brief Description*	*Default Value*
Outside Flow Rate	The speed at which the Outside Volume moves out of the probe and into the outside rinse position in the rinse station. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	10 mL/min
Inside Rinse Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Bottom for rinsing the probe at the inside rinse position in the rinse station.	8 mm
Outside Rinse Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Bottom for rinsing the probe at the outside rinse position in the rinse station.	8 mm

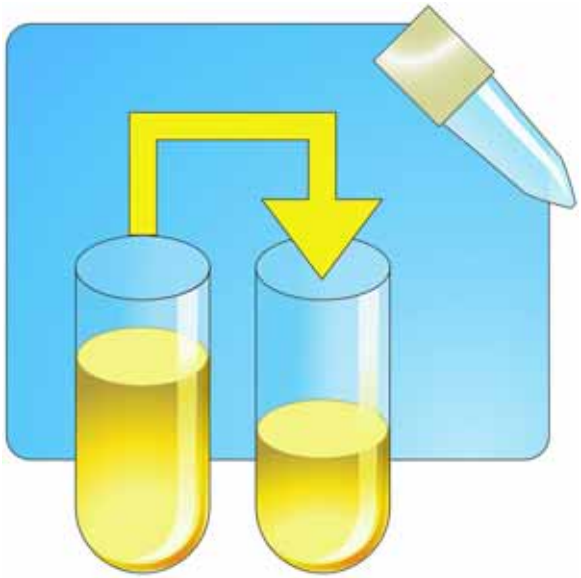
Transfer with Tips - Advanced/Rinsing Table *(Page 2 of 2)*

Transfer with Tips - Instruments

Property Name	*Brief Description*	*Default Value*
Liquid Handler	The liquid handler that the task will affect.	
Pump	The pump or VPS that the task will affect.	

Transfer with Tips - Instruments

Transfer with Tips - Sequence of Steps



The following is an overview for the sequence of steps.

1 **Load Tips (Optional)** on page C-84
2 **Aspirate** on page C-84
3 **Dispense** on page C-86
4 **Eject Tips (Optional)** on page C-88
5 **Inside Rinse (Optional)** on page C-89
6 **Outside Rinse (Optional)** on page C-89
7 **Rinse Touch Off** on page C-89

LOAD TIPS (OPTIONAL)

1 Move Z to top
2 If Load Tips before Task = TRUE, load tips

ASPIRATE

Reservoir

1 Move Z to top
2 Move probe to Result Well in Result Zone
3 Lower probe into well to Result Height
4 Aspirate Source Volume (from Reservoir) at Source Flow Rate

Tray (if Extra Volume = 0)

1 Aspirate Source Air Gap at Air Gap Flow Rate
2 Move probe to Source Well in Source Zone
3 Lower probe into well to Source Height
4 Prewet Tips (only 1st Iteration)
   a) If Prewet Tip = TRUE
      1) Aspirate Prewet Volume at Source Flow Rate using Liquid Level Following, if selected
      2) Dispense Prewet Volume at Result Flow Rate using Liquid Level Following, if selected
   b) If Prewet Tip=FALSE
      1) Skip to step 5
5 Aspirate Source Volume at Source Flow Rate using Liquid Level Following, if selected
6 Move Z to top

Tray (if Extra Volume > 0)

1 Move Z to top
2 Aspirate Source Air Gap at Air Gap Flow Rate
3 Move probe to Source Well in Source Zone
4 Lower probe into well to Source Height
5 Prewet Tips (only 1st Iteration)
   a) If Prewet Tip = TRUE
      1) Aspirate Prewet Volume at Source Flow Rate using Liquid Level Following, if selected
      2) Dispense Prewet Volume at Result Flow Rate using Liquid Level Following, if selected

b) If Prewet Tip=FALSE

1) Skip to step 5

6 Aspirate Source Volume + Extra Volume at Source Flow Rate using Liquid Level Following, if selected

7 Move Z to top

DISPENSE

Reservoir

1 Dispense Source Volume at Result Flow Rate using Liquid Level Following, if selected

2 If Source Volume is greater than tip volume, repeat Aspirate (Reservoir) step 4 and Dispense (Reservoir) step 1 until Source Volume is delivered

3 Wait Equilibration Time

4 If Touch Off = TRUE

a) If Side Touch Off

1) Move probe to Side Z Offset

2) Move probe to edge of well

3) Move probe to Side X Offset

4) Move probe to center of well

5) Move Z to top

b) If Surface Touch Off

1) Move probe to Side Z Offset

2) Move Z to top

5 If Source Volume is greater than tip volume, repeat Aspirate and Dispense

Tray (if Extra Volume = 0)

1 Move probe to Result Well in Result Zone
2 Lower probe into well to Result Height
3 Dispense Source Volume at Result Flow Rate using Liquid Level Following, if selected
4 Dispense Source Air Gap at Result Flow Rate
5 Wait Equilibration Time
6 If Touch Off = TRUE
   a) If Side Touch Off
      1) Move probe to Side Z Offset
      2) Move probe to edge of well
      3) Move probe to Side X Offset
      4) Move probe to center of well
      5) Move Z to top
   b) If Surface Touch Off
      1) Move probe to Side Z Offset
      2) Move Z to top
7 If Source Volume is greater than tip volume, repeat aspirate and dispense until Source Volume is delivered

if Extra Volume >0

1 Move probe to Result Well in Result Zone
2 Lower probe into well to Result Height
3 Dispense Source Volume at Result Flow Rate using Liquid Level Following, if selected
4 Wait Equilibration Time

5 If Touch Off = TRUE

   a) If Side Touch Off

      1) Move probe to Side Z Offset

      2) Move probe to edge of well

      3) Move probe to Side X Offset

      4) Move probe to center of well

      5) Move Z to top

   b) If Surface Touch Off

      1) Move probe to Side Z Offset

      2) Move Z to top

6 If Source Volume is greater than tip volume, repeat aspirate (Air Gap and Extra Volume are not aspirated) and dispense until Source Volume is delivered

7 Move probe to well in Inside Rinse Zone

8 Lower probe into well to Inside Rinse Height

9 Dispense Extra Volume + Source Air Gap at Result Flow Rate

EJECT TIPS (OPTIONAL)

If Eject Tips After Task = TRUE

1 Move Z to top

2 Move probe to Tip Waste Zone

3 Eject tips by moving Z to Z Clamp Height

INSIDE RINSE (OPTIONAL)

1 Move Z to top
2 Move probe to well in Inside Rinse Zone
3 Lower probe into well to Inside Rinse Height
4 Aspirate Inside Volume (from Reservoir) at Inside Flow Rate
5 Dispense Inside Volume at Inside Flow Rate
6 Repeat steps 4–5 until Inside Volume delivered

OUTSIDE RINSE (OPTIONAL)

1 Move Z to top
2 Move probe to well in Outside Rinse Zone
3 Lower probe into well to Outside Rinse Height
4 Aspirate Outside Volume (from Reservoir) at Outside Flow Rate
5 Dispense Outside Volume at Outside Flow Rate
6 Repeat steps 4–5 until Outside Volume delivered

RINSE TOUCH OFF

Side

1 Move Z to top
2 Move probe to well in Inside Rinse Zone
3 Move probe to Side Rinse Z Offset
4 Move probe 1.5 mm in the Y direction (forward)
5 Move probe to Side Rinse Y Offset

6 Move probe to the center of the well

7 Move Z to top

Surface

1 Move Z to top

2 Move probe to well in Outside Rinse Zone

3 Move probe to Surface Rinse Z Offset

4 Move Z to top

None

1 Move Z to top

Tasks - SPE

D

Gilson supplies SPE tasks for use on the following instruments:

- ASPEC XL4
- GX-271 ASPEC/GX-274 ASPEC without Pump
- ASPEC XL/XLi
- SPE 215*

  *The Fractionate task cannot be used on the SPE 215. Default values in all tasks not optimized for the SPE 215.

Additionally, when using Code 300-series racks, SPE tasks can be used on the following instruments:

- 215 Liquid Handler/215 Liquid Handler without Pump
- 215 SW Liquid Handler
- Multiple Probe 215 Liquid Handler
- Quad-Z 215

SPE

SPE Tasks

	Gilson Task Name and Description
	Condition This task prepares the DEC to accept a prepared sample by aspirating then dispensing liquid (source) from the reservoir, tray, or transfer ports with the mobile rack positioned over the drain.
	Dry This Task dries the DECs by pushing pressurized gas or air from the syringes through the DECs with the mobile rack positioned over the drain.
	Elute This task aspirates the specified volume of liquid (source) from the reservoir, tray, or transfer ports and then dispenses the volume to the wells of the DEC zone with the mobile rack over the collect position.
	Evaporate This task evaporates liquids in the collect wells by passing pressurized gas or air from the syringes into the wells with the mobile rack positioned over the drain.

SPE Tasks Table *(Page 1 of 2)*

SPE Tasks (Continued)

Fractionate

If multiple analytes of interest will be collected, use this task to aspirate the specified volume from the reservoir, tray, or transfer ports and then dispense it to the DEC with the mobile rack positioned over the specified collect zone.

Load

If analytes of interest bind to the column, use this task to aspirate a specified volume of liquid (source) from the reservoir, tray, or transfer ports and then dispense the volume to the wells of the DEC zone with the mobile rack positioned over the drain.

Load and Collect

If the contaminants bind to the column and the analytes of interest pass through the column into the collect zone, use this task to aspirate the specified volume of liquid (source) from the reservoir, tray, or transfer ports and then dispense the volume to the wells of the DEC zone with the mobile rack over the collect position.

Move Mobile Rack

This task initializes the mobile rack or moves over the drain or the collect.

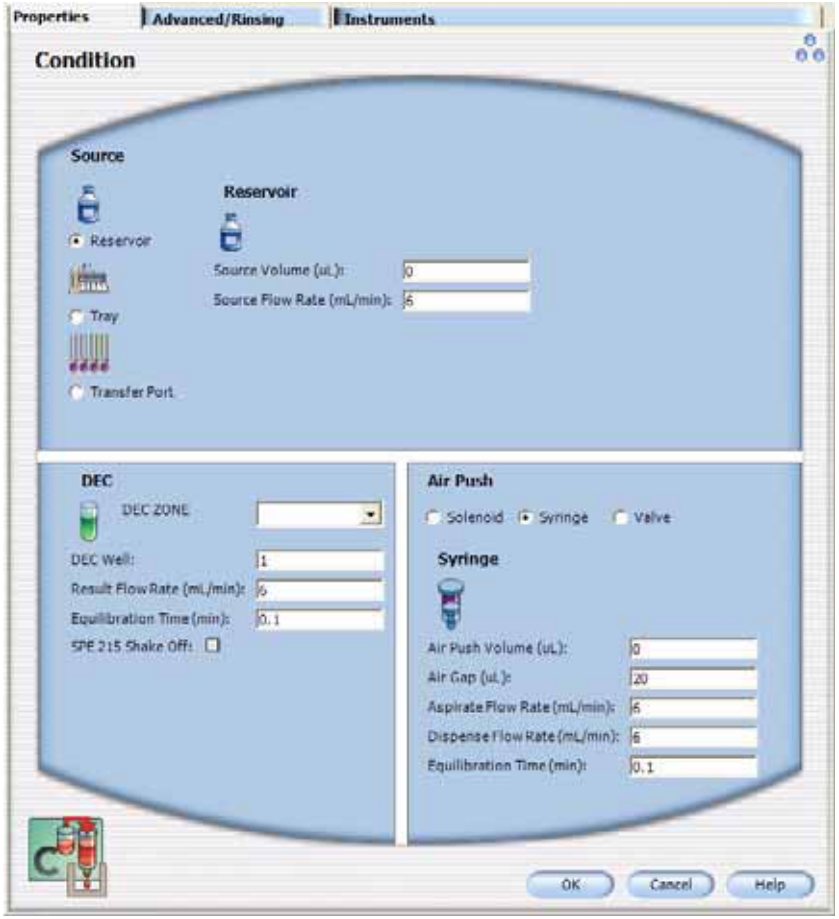
Wash

This task washes the DEC by aspirating a specified volume of liquid (source) from the reservoir, tray, or transfer ports and then dispensing the volume to the wells of the DEC zone with the mobile rack positioned over the drain.

SPE Tasks Table *(Page 2 of 2)*

Condition

This task prepares the DEC to accept a prepared sample by aspirating then dispensing liquid (source) from the reservoir, tray, or transfer ports with the mobile rack positioned over the drain.



For more information about the properties on each tab, see:

Condition - Properties on page D-5

Condition - Advanced/Rinsing on page D-9

Condition - Instruments on page D-11

Condition - Sequence of Steps on page D-12

Condition - Properties

Property Name	*Brief Description*	*Default Value*
Source	Select Reservoir, Tray, or Transfer Port.	Reservoir
Reservoir Source Volume	The quantity of a sample.	0 uL
Reservoir Source Flow Rate	The speed at which the Source Volume moves into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	6 mL/min
Tray Source Zone	The zone from which the Source Volume is drawn.	
Tray Source Well	The well in the Source Zone from which the Source Volume is drawn. When using a multiple probe instrument, type #x where x is a value defined in the Sample List.	1
Tray Source Volume	The quantity of a sample.	0 uL
Tray Extra Volume	An additional volume to the Source Volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/reservoir solvent and the Source Volume.	0 uL
Tray Source Air Gap	The quantity of the air gap aspirated before the Source Volume.	50 uL

Condition - Properties Table *(Page 1 of 5)*

Condition - Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Tray Source Flow Rate	The speed at which the Source Volume and Extra Volume move into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	6 mL/min
Tray Air Gap Flow Rate	The speed at which the Source Air Gap moves into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	1 mL/min
Transfer Port Source Zone	The zone from which the Source Volume is drawn.	
Transfer Port Transfer Port	Select the Transfer Port to activate for the task.	A
Transfer Port Source Volume	The quantity of a sample.	0 uL
Transfer Port Extra Volume	An additional volume to the Source Volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/reservoir solvent and the Source Volume.	0 uL
Transfer Port Source Air Gap	The quantity of the air gap aspirated before the Source Volume.	50 uL
Transfer Port Source Flow Rate	The speed at which the Source Volume and Extra Volume move into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	6 mL/min

Condition - Properties Table *(Page 2 of 5)*

Condition - Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Transfer Port Air Gap Flow Rate	The speed at which the Source Air Gap moves into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	1 mL/min
DEC Zone	The zone to which the Reservoir Volume is delivered.	
DEC Well	The well in the DEC Zone to which the Source Volume is delivered. When using a multiple probe instrument, type #x where x is a value defined in the Sample List.	1
Result Flow Rate	The speed at which the Source Volume moves out of the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	6 mL/min
Equilibration Time	Time the program waits after each dispense before moving out of the well.	0.1 min
SPE 215 Shake Off	Select the box and the SPE 215 unseals the seal foot from the mobile rack after dispensing or performing an air push. Clear the box when an instrument other than the SPE 215 is used.	
Air Push	Select Solenoid, Syringe, or Valve. Solenoid option only valid for the SPE 215, ASPEC XL, and ASPEC XLi. Valve option only valid for the GX-271/274 ASPEC and ASPEC XL4.	Syringe
Solenoid Air Push Time	The length of time the air is dispensed from the solenoid or gas valve(s).	0.01 min

Condition - Properties Table *(Page 3 of 5)*

Condition - Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Solenoid Equilibration Time	Time the program waits after a solenoid air push before moving out of the well.	0.1 min
Syringe Air Push Volume	The quantity of air dispensed through the probe.	0 uL
Syringe Air Gap	The quantity of an air gap.	20 uL
Syringe Aspirate Flow Rate	The speed at which the Air Push Volume moves into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	6 mL/min
Syringe Dispense Flow Rate	The speed at which the Air Push Volume moves out of the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	6 mL/min
Syringe Equilibration Time	Time the program waits after a syringe air push before moving out of the well.	0.1 min
Valve Probe to Valve Volume	Transfer tubing volume between the probe and the valve. Volume of an air gap aspirated to clear the transfer tubing before performing the air push. The volume should be less than the syringe volume. Default value is the recommended value for GX-27X ASPEC. Recommended value for ASPEC XL4 is 1100 uL.	4100 uL

Condition - Properties Table *(Page 4 of 5)*

Condition - Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Valve Air Push Time	The length of time the air is dispensed from the valve.	0.01 min
Valve Equilibration Time	Time the program waits after a valve air push before moving out of the well.	0.1 min

Condition - Properties Table *(Page 5 of 5)*

Condition - Advanced/Rinsing

Property Name	*Brief Description*	*Default Value*
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated. This selection changes the reference point for the Source Height to the liquid surface. Initial Volumes should be set in the Sample List when using this option.	
Liquid Level Detection	When selected, the probe will stop when the instrument detects the liquid surface. This selection changes the reference point for the Source Height to the height at which the liquid was detected. **Note:** If no liquid is detected, the probe will go to the bottom of the tubes. This option can only be used on instruments that support Liquid Level Detection.	
Sensitivity	Sensitivity is a percent (0 - 100%) used to detect liquid when Liquid Level Detection is used. A low setting is the most sensitive and higher settings are less sensitive.	1

Condition - Advanced/Rinsing Table *(Page 1 of 3)*

Condition - Advanced/Rinsing (Continued)

Property Name	*Brief Description*	*Default Value*
Source Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from a defined reference point (Tube Bottom unless Liquid Level Detection or Liquid Level Following is selected) when aspirating the Source Volume.	2 mm
Result Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Top when delivering to the DEC Zone.	-18 mm
Air Push Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Top when performing the air push.	-18 mm
Inside Rinse Zone	The zone to which the Inside Rinse Volume is delivered.	Inside Rinse
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
Inside Volume	The quantity of liquid used to rinse the inside of the probe.	500 uL
Inside Flow Rate	The speed at which the Inside Rinse Volume moves out of the probe and into the inside rinse position in the rinse station. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	10 mL/min
Outside Volume	The quantity of liquid used to rinse the outside of the probe.	1000 uL
Outside Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	10 mL/min

Condition - Advanced/Rinsing Table *(Page 2 of 3)*

Condition - Advanced/Rinsing (Continued)

Property Name	*Brief Description*	*Default Value*
Inside Rinse Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Bottom for rinsing the probe at the inside rinse position in the rinse station.	0 mm
Outside Rinse Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Bottom for rinsing the probe at the inside rinse position in the rinse station.	0 mm

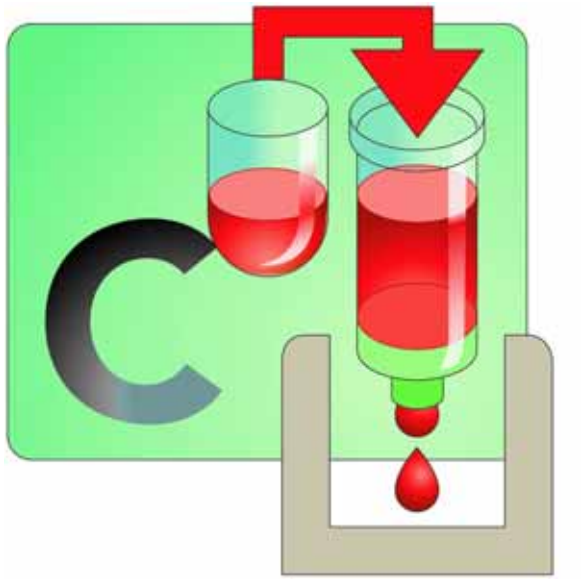
Condition - Advanced/Rinsing Table *(Page 3 of 3)*

Condition - Instruments

Property Name	*Brief Description*	*Default Value*
Liquid Handler	The liquid handler that the Task will affect.	
Pump	The pump or VPS that the Task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	

Condition - Instruments

Condition - Sequence of Steps



The following is an overview for the sequence of steps.

1 **Move Mobile Rack** on page D-12
2 **Aspirate** on page D-12
3 **Dispense** on page D-14
4 **Air Push** on page D-15
5 **Inside Rinse** on page D-18
6 **Outside Rinse** on page D-18
7 **Gas/Air Purge (SPE 215 Only)** on page D-18

MOVE MOBILE RACK

1 Move Z to top
2 Move mobile rack (DEC Zone) over the drain

ASPIRATE

Reservoir

1 Move Z to top
2 Aspirate Source Volume (from Reservoir) at Source Flow Rate
3 Move probe to DEC Well in DEC Zone
4 Lower probe to Result Height from Tube Top
5 Dispense Source Volume (from Reservoir) at Result Flow Rate
6 Wait Equilibration Time

7 Move Z to top
8 If Source Volume is greater than Syringe Volume, repeat steps 2–7 until Source Volume delivered
9 If SPE 215 Shake Off = TRUE, perform Shake Off
   a) Move probe to edge of well
   b) Move probe to center of well
   c) Move Z to top

   If SPE 215 Shake Off = FALSE
   a) Move Z to top

Tray

1 Aspirate Source Air Gap at Air Gap Flow Rate
2 Move probe to Source Well in Source Zone
3 Lower probe into Source Well to Source Height
4 Aspirate Source Volume + Extra Volume at Source Flow Rate using Liquid Level Following, if selected
5 Move Z to top

Transfer Port

1 Aspirate Source Air Gap at Air Gap Flow Rate
2 Move probe to well in Source Zone
3 Lower probe to Source Height from Tube Bottom
4 Set Transfer Port to On
5 Aspirate Source Volume + Extra Volume at Source Flow Rate

6 Set Transfer Port to Off

7 Move Z to top

DISPENSE

Tray

1 Move probe to DEC Well in DEC Zone

2 Lower probe to Result Height from Tube Top

3 Dispense Source Volume at Result Flow Rate

4 Wait Equilibration Time

5 Move Z to top

6 If Source Volume is greater than Syringe Volume, repeat Aspirate (Air Gap and Extra Volume are not aspirated) and Dispense until Source Volume delivered

7 If SPE 215 Shake Off = TRUE, perform Shake Off

   a) Move probe to edge of well

   b) Move probe to center of well

   c) Move Z to top

   If SPE 215 Shake Off = FALSE

   a) Move Z to top

8 Move probe to well in Inside Rinse Zone

9 Lower probe to Inside Rinse Height from Tube Bottom

10 Dispense Extra Volume + Air Gap at Result Flow Rate

11 Move Z to top

Transfer Port

1 Move probe to DEC Well in DEC Zone
2 Lower probe to Result Height from Tube Top
3 Dispense Source Volume at Result Flow Rate
4 Wait Equilibration Time
5 Move Z to top
6 If Source Volume is greater than Syringe Volume, repeat Aspirate (Air Gap and Extra Volume not aspirated) and Dispense until Source Volume delivered
7 If SPE 215 Shake Off = TRUE, perform Shake Off
   a) Move probe to edge of well
   b) Move probe to center of well
   c) Move Z to top

   If SPE 215 = FALSE
   a) Move Z to top
8 Move probe to well in Inside Rinse Zone
9 Lower probe to Inside Rinse Height from Tube Bottom
10 Dispense Extra Volume + Air Gap at Result Flow Rate
11 Move Z to top

AIR PUSH

Solenoid

1 Move probe to well in Inside Rinse Zone
2 Aspirate 250 uL at 5 mL/min

3 Set Voltage On and Output Contact 1 to Close (SPE 215) or
Set Output Contact 8 to Close (ASPEC XL/XLi)

4 Wait 0.05 min (SPE 215) or wait 0.01min (ASPEC XL/XLi)

5 Set Voltage Off and Output Contact 1 to Open (SPE 215) or set Output Contact 8 to Open (ASPEC XL/XLi)

6 Move Z to top

7 Move probe to DEC Wells in DEC Zone

8 Lower probe to Air Push Height from Tube Top

9 Set Voltage On and Output Contact 1 to Close (SPE 215) or
Set Output Contact 8 to Close (ASPEC XL/XLi)

10 Wait Air Push Time

11 Set Voltage Off and Output Contact 1 to Open (SPE 215) or set Output Contact 8 to Open (ASPEC XL/XLi)

12 Wait Equilibration Time

13 Move Z to top, performing shake off (SPE 215)

14 Move probe to well in Inside Rinse Zone

15 Dispense 250 uL at 5 mL/min

Syringe

1 Move probe to DEC Well in DEC Zone

2 Move Z to top

3 Aspirate Air Gap at Aspirate Flow Rate

4 Move probe to DEC Well in DEC Zone

5 Aspirate Air Push Volume at Aspirate Flow Rate

6 Lower probe to Air Push Height from Tube Top

7 Dispense Air Push Volume at Dispense Flow Rate

8 Wait Equilibration Time
9 Move Z to top, performing shake off (SPE 215)
10 Repeat steps 4–9 until Air Push Volume is dispensed
11 Move probe to Inside Rinse Wells at Inside Rinse Zone
12 Dispense Air Gap at Dispense Flow Rate

Valve

1 Move probe to well in Inside Rinse Zone
2 Aspirate Probe to Valve Volume at 10 mL/min
3 Switch valve to gas
4 Wait 0.05 min
5 Switch valve to probe
6 Move Z to top
7 Move probe to DEC Well in DEC Zone
8 Lower probe to Air Push Height from Tube Top
9 Switch valve to gas
10 Wait Air Push Time
11 Switch valve to probe
12 Wait Equilibration Time
13 Move Z to top, performing shake off (SPE 215)
14 Move probe to well in Inside Rinse Zone
15 Dispense Probe to Valve Volume at 10 mL/min

INSIDE RINSE

1 Move probe to well in Inside Rinse Zone
2 Lower probe to Inside Rinse Height from Tube Bottom
3 Aspirate (from Reservoir) Inside Rinse Volume at Inside Rinse Flow Rate
4 Dispense Inside Rinse Volume at Inside Rinse Flow Rate
5 Move Z to top

OUTSIDE RINSE

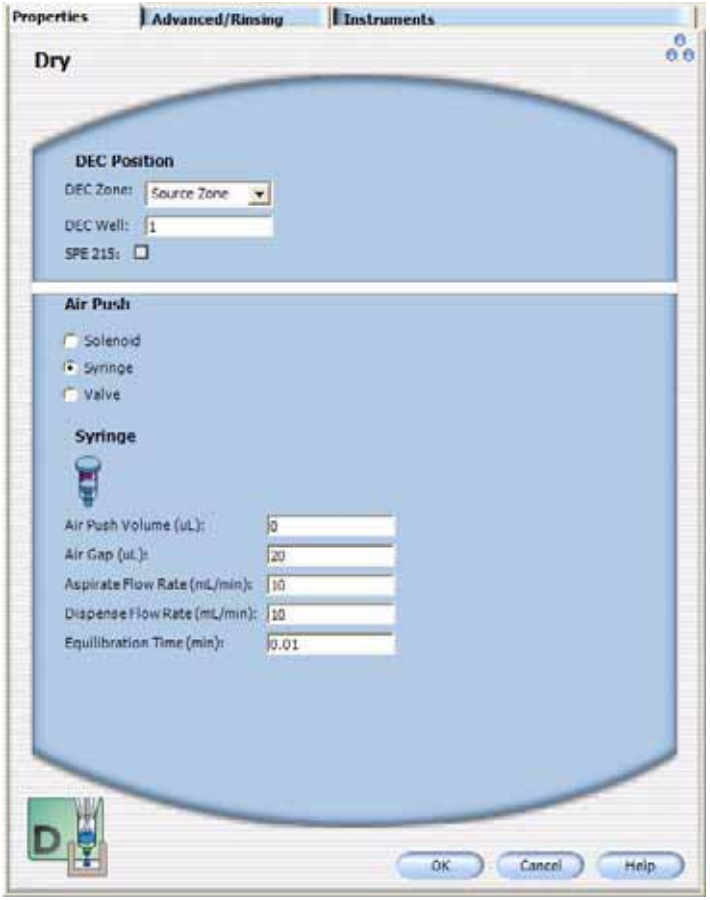
1 Move probe to well in Outside Rinse Zone
2 Lower probe into wells at Outside Rinse Height from Tube Bottom
3 Aspirate (from Reservoir) Outside Rinse Volume at Outside Rinse Flow Rate
4 Dispense Outside Rinse Volume at Outside Rinse Flow Rate
5 Move Z top

GAS/AIR PURGE (SPE 215 ONLY)

1 Move Z to top
2 Set Voltage On and Output Contact 1 to Close
3 Wait 0.02 min
4 Set Voltage Off and Output Contact 1 to Open
5 Move Z to top

Dry

This Task dries the DECs by pushing pressurized gas or air from the syringes through the DECs with the mobile rack positioned over the drain.



For more information about the properties on each tab, see:

Dry - Properties on page D-20

Dry - Advanced/Rinsing on page D-22

Dry - Instruments on page D-23

Dry - Sequence of Steps on page D-23

Dry - Properties

Property Name	*Brief Description*	*Default Value*
DEC Zone	The zone to which the Reservoir Volume is delivered.	
DEC Well	The well in the DEC Zone to which the Source Volume is delivered. When using a multiple probe instrument, type #x where x is a value defined in the Sample List.	1
SPE 215	The SPE 215 Shake Off unseals the seal foot from the mobile rack.	
Air Push	Select Solenoid, Syringe, or Valve. Solenoid option only valid for the SPE 215, ASPEC XL, and ASPEC XLi. Valve option only valid for the GX-271/274 ASPEC and ASPEC XL4.	Syringe
Solenoid Air Push Time	The length of time the air is dispensed from the solenoid or gas valve(s).	0.01 min
Solenoid Equilibration Time	Time the program waits after a solenoid air push before moving out of the well.	0.01 min
Syringe Air Push Volume	The quantity of air dispensed through the probe.	0 uL
Syringe Air Gap	The quantity of an air gap.	20 uL
Syringe Aspirate Flow Rate	The speed at which the Air Push Volume moves into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	10 mL/min

Dry - Properties Table *(Page 1 of 2)*

Dry - Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Syringe Dispense Flow Rate	The speed at which the Air Push Volume moves out of probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	10 mL/min
Syringe Equilibration Time	Time the program waits after a syringe air push before moving out of the well.	0.01 min
Valve Probe to Valve Volume	Transfer tubing volume between the probe and the valve. Volume of an air gap aspirated to clear the transfer tubing before performing the air push. The volume should be less than the syringe volume. Default value is the recommended value for GX-27X ASPEC. Recommended value for ASPEC XL4 is 1100 uL.	4100 uL
Valve Air Push Time	The length of time the air is dispensed from the valve.	0.01 min
Valve Equilibration Time	Time the program waits after a valve air push before moving out of the well.	0.01 min

Dry - Properties Table *(Page 2 of 2)*

Dry - Advanced/Rinsing

Property Name	*Brief Description*	*Default Value*
Air Push Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Top when performing the air push.	-18 mm
Inside Rinse Zone	The zone to which the Inside Rinse Volume is delivered.	Inside Rinse
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
Inside Volume	The quantity of liquid used to rinse the inside of the probe.	250 uL
Inside Flow Rate	The speed at which the Inside Rinse Volume moves out of the probe and into the inside rinse position in the rinse station. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	10 mL/min
Outside Volume	The quantity of liquid used to rinse the outside of the probe.	1000 uL
Outside Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	10 mL/min
Inside Rinse Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Bottom for rinsing the probe at the inside rinse position in the rinse station.	0 mm
Outside Rinse Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Bottom for rinsing the probe at the inside rinse position in the rinse station.	0 mm

Dry - Advanced/Rinsing

Dry - Instruments

Property Name	*Brief Description*	*Default Value*
Liquid Handler	The liquid handler that the Task will affect.	
Pump	The pump or VPS that the Task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	

Dry - Instruments

Dry - Sequence of Steps

The following is an overview for the sequence of steps.

1 **Move Mobile Rack** on page D-23
2 **Air Push** on page D-24
3 **Inside Rinse** on page D-26
4 **Outside Rinse** on page D-26
5 **Gas/Air Purge** on page D-26

MOVE MOBILE RACK

1 Move Z to top
2 Move mobile rack (DEC Zone) over drain

AIR PUSH

Solenoid

1 Move probe to well in Inside Rinse Zone
2 Aspirate 250 uL at 5 mL/min
3 Set Voltage On and Output Contact 1 to Close (SPE 215) or
Set Output Contact 8 to Close (ASPEC XL/XLi)
4 Wait 0.05 min (SPE 215) or wait 0.01min (ASPEC XL/XLi)
5 Set Voltage Off and Output Contact 1 to Open (SPE 215) or set Output Contact 8 to Open (ASPEC XL/XLi)
6 Move Z to top
7 Move probe to DEC Wells in DEC Zone
8 Lower probe to Air Push Height from Tube Top
9 Set Voltage On and Output Contact 1 to Close (SPE 215) or
Set Output Contact 8 to Close (ASPEC XL/XLi)
10 Wait Air Push Time
11 Set Voltage Off and Output Contact 1 to Open (SPE 215) or set Output Contact 8 to Open (ASPEC XL/XLi)
12 Wait Equilibration Time
13 Move Z to top, performing shake off (SPE 215)
14 Move probe to well in Inside Rinse Zone
15 Dispense 250 uL at 5 mL/min

Syringe

1 Move probe to DEC Well in DEC Zone
2 Move Z to top

3 Aspirate Air Gap at Aspirate Flow Rate
4 Move probe to DEC Well in DEC Zone
5 Aspirate Air Push Volume at Aspirate Flow Rate
6 Lower probe to Air Push Height from Tube Top
7 Dispense Air Push Volume at Dispense Flow Rate
8 Wait Equilibration Time
9 Move Z to top, performing shake off (SPE 215)
10 Repeat steps 4–9 until Air Push Volume is dispensed
11 Move probe to Inside Rinse Wells at Inside Rinse Zone
12 Dispense Air Gap at Dispense Flow Rate

Valve

1 Move probe to well in Inside Rinse Zone
2 Aspirate Probe to Valve Volume at 10 mL/min
3 Switch valve to gas
4 Wait 0.05 min
5 Switch valve to probe
6 Move Z to top
7 Move probe to DEC Well in DEC Zone
8 Lower probe to Air Push Height from Tube Top
9 Switch valve to gas
10 Wait Air Push Time
11 Switch valve to probe

Dry

12 Wait Equilibration Time
13 Move Z to top, performing shake off (SPE 215)
14 Move probe to well in Inside Rinse Zone
15 Dispense Probe to Valve Volume at 10 mL/min

INSIDE RINSE

1 Move probe to well in Inside Rinse Zone
2 Lower probe to Inside Rinse Height from Tube Bottom
3 Aspirate (from Reservoir) Inside Rinse Volume at Inside Rinse Flow Rate
4 Dispense Inside Rinse Volume at Inside Rinse Flow Rate
5 Move Z to top

OUTSIDE RINSE

1 Move probe to well in Outside Rinse Zone
2 Lower probe into wells at Outside Rinse Height from Tube Bottom
3 Aspirate (from Reservoir) Outside Rinse Volume at Outside Rinse Flow Rate
4 Dispense Outside Rinse Volume at Outside Rinse Flow Rate
5 Move Z top

GAS/AIR PURGE

If SPE 215 = TRUE

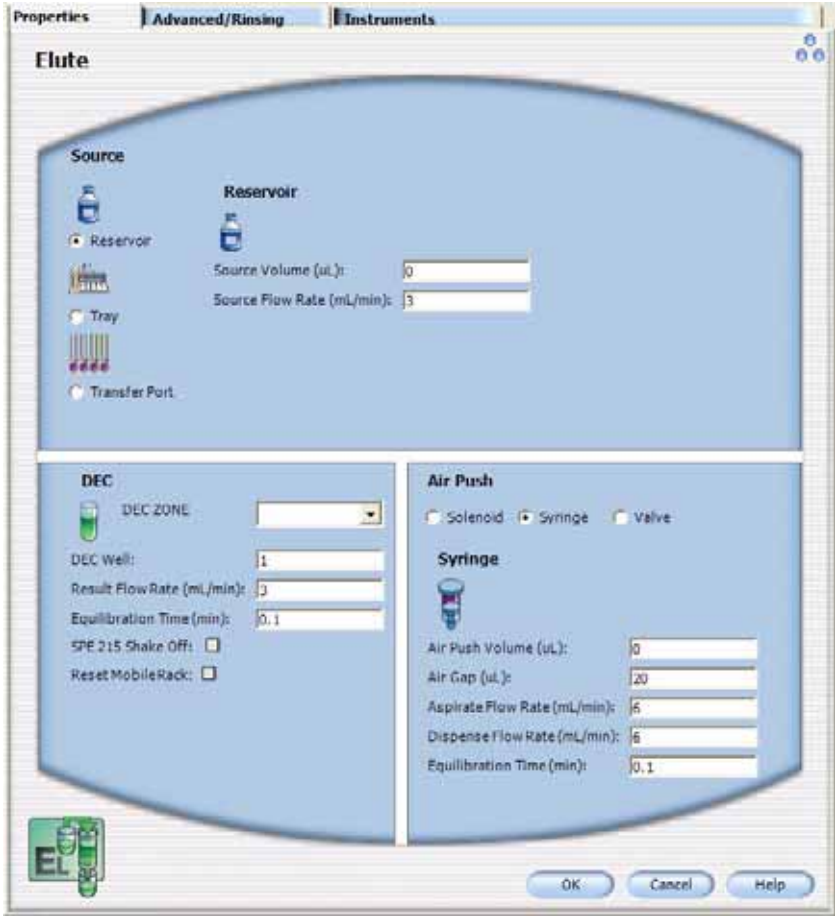
1 Move Z to top
2 Set Voltage On and Output Contact 1 to Close
3 Wait 0.02 min

4 Set Voltage Off and Output Contact 1 to Open

5 Move Z to top

Elute

This task aspirates the specified volume of liquid (source) from the reservoir, tray, or transfer ports and then dispenses the volume to the wells of the DEC zone with the mobile rack over the collect position.



For more information about the properties on each tab, see:

Elute - Properties on page D-29

Elute - Advanced/Rinsing on page D-33

Elute - Instruments on page D-35

Elute - Sequence of Steps on page D-36

Elute - Properties

Property Name	*Brief Description*	*Default Value*
Source	Select Reservoir, Tray, or Transfer Port.	Reservoir
Reservoir Source Volume	The quantity of a sample.	0 uL
Reservoir Source Flow Rate	The speed at which the Source Volume moves into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	3 mL/min
Tray Source Zone	The zone from which the Source Volume is drawn.	
Tray Source Well	The well in the Source Zone from which the Source Volume is drawn. When using a multiple probe instrument, type #x where x is a value defined in the Sample List.	1
Tray Source Volume	The quantity of a sample.	0 uL
Tray Extra Volume	An additional volume to the Source Volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/reservoir solvent and the Source Volume.	0 uL
Tray Source Air Gap	The quantity of the air gap aspirated before the Source Volume.	50 uL

Elute - Properties Table *(Page 1 of 5)*

Elute - Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Tray Source Flow Rate	The speed at which the Source Volume and Extra Volume move into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	3 mL/min
Tray Air Gap Flow Rate	The speed at which the Source Air Gap moves into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	1 mL/min
Transfer Port Source Zone	The zone from which the Source Volume is drawn.	
Transfer Port Transfer Port	Select the Transfer Port to activate for the task.	A
Transfer Port Source Volume	The quantity of a sample.	0 uL
Transfer Port Extra Volume	An additional volume to the Source Volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/reservoir solvent and the Source Volume.	0 uL
Transfer Port Source Air Gap	The quantity of the air gap aspirated before the Source Volume.	50 uL
Transfer Port Source Flow Rate	The speed at which the Source Volume and Extra Volume move into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	3 mL/min

Elute - Properties Table *(Page 2 of 5)*

Elute - Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Transfer Port Air Gap Flow Rate	The speed at which the Source Air Gap moves into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	1 mL/min
DEC Zone	The zone to which the Reservoir Volume is delivered.	
DEC Well	The well in the DEC Zone to which the Source Volume is delivered. When using a multiple probe instrument, type #x where x is a value defined in the Sample List.	1
Result Flow Rate	The speed at which the Source Volume moves out of the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	3 mL/min
Equilibration Time	Time the program waits after each dispense before moving out of the well.	0.1 min
SPE 215 Shake Off	The SPE 215 Shake Off unseals the seal foot from the mobile rack.	
Reset Mobile Rack	The reset mobile rack moves the mobile rack over the drain.	
Air Push	Select Solenoid, Syringe, or Valve. Solenoid option only valid for the SPE 215, ASPEC XL, and ASPEC XLi. Valve option only valid for the GX-271/274 ASPEC and ASPEC XL4.	Syringe
Solenoid Air Push Time	The length of time the air is dispensed from the solenoid or gas valve(s).	0.01 min

Elute - Properties Table *(Page 3 of 5)*

Elute - Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Solenoid Equilibration Time	Time the program waits after a solenoid air push before moving out of the well.	0.1 min
Syringe Air Push Volume	The quantity of air dispensed through the probe.	0 uL
Syringe Air Gap	The quantity of an air gap.	20 uL
Syringe Aspirate Flow Rate	The speed at which the Air Push Volume moves into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	6 mL/min
Syringe Dispense Flow Rate	The speed at which the Air Push Volume moves out of the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	6 mL/min
Syringe Equilibration Time	Time the program waits after a syringe air push before moving out of the well.	0.1 min
Valve Probe to Valve Volume	Transfer tubing volume between the probe and the valve. Volume of an air gap aspirated to clear the transfer tubing before performing the air push. The volume should be less than the syringe volume. Default value is the recommended value for GX-27X ASPEC. Recommended value for ASPEC XL4 is 1100 uL.	4100 uL

Elute - Properties Table *(Page 4 of 5)*

Elute - Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Valve Air Push Time	The length of time the air is dispensed from the valve.	0.01 min
Valve Equilibration Time	Time the program waits after a valve air push before moving out of the well.	0.1 min

Elute - Properties Table *(Page 5 of 5)*

Elute - Advanced/Rinsing

Property Name	*Brief Description*	*Default Value*
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated. This selection changes the reference point for the Source Height to the liquid surface. Initial Volumes should be set in the Sample List when using this option.	
Liquid Level Detection	When selected, the probe will stop when the instrument detects the liquid surface. This selection changes the reference point for the Source Height to the height at which the liquid was detected. **Note:** If no liquid is detected, the probe will go to the bottom of the tubes. This option can only be used on instruments which support Liquid Level Detection.	
Sensitivity	Sensitivity is a percent (0 - 100%) used to detect liquid when Liquid Level Detection is used. A low setting is the most sensitive and higher settings are less sensitive.	1

Elute - Advanced/Rinsing Table *(Page 1 of 3)*

Elute - Advanced/Rinsing (Continued)

Property Name	*Brief Description*	*Default Value*
Source Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from a defined reference point (Tube Bottom unless Liquid Level Detection or Liquid Level Following is selected) when aspirating the Source Volume.	2 mm
Result Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Top when delivering to the DEC Zone.	-18 mm
Air Push Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Top when performing the air push.	-18 mm
Inside Rinse Zone	The zone to which the Inside Rinse Volume is delivered.	Inside Rinse
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
Inside Volume	The quantity of liquid used to rinse the inside of the probe.	500 uL
Inside Flow Rate	The speed at which the Inside Rinse Volume moves out of the probe and into the inside rinse position in the rinse station. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	10 mL/min
Outside Volume	The quantity of liquid used to rinse the outside of the probe.	1000 uL
Outside Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	10 mL/min

Elute - Advanced/Rinsing Table *(Page 2 of 3)*

Elute - Advanced/Rinsing (Continued)

Property Name	*Brief Description*	*Default Value*
Inside Rinse Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Bottom for rinsing the probe at the inside rinse position in the rinse station.	0 mm
Outside Rinse Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Bottom for rinsing the probe at the inside rinse position in the rinse station.	0 mm

Elute - Advanced/Rinsing Table *(Page 3 of 3)*

Elute - Instruments

Property Name	*Brief Description*	*Default Value*
Liquid Handler	The liquid handler that the Task will affect.	
Pump	The pump or VPS that the Task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	

Elute - Instruments

Elute - Sequence of Steps

The following is an overview for the sequence of steps.

1 **Move Mobile Rack** on page D-36
2 **Aspirate** on page D-36
3 **Dispense** on page D-38
4 **Air Push** on page D-39
5 **Inside Rinse** on page D-42
6 **Outside Rinse** on page D-42
7 **Gas/Air Purge** on page D-42

MOVE MOBILE RACK

1 Move Z to top
2 Move mobile rack (DEC Zone) over the collect position

ASPIRATE

Reservoir

1 Move Z to top
2 Aspirate Source Volume (from Reservoir) at Source Flow Rate
3 Move probe to DEC Well in DEC Zone
4 Lower probe to Result Height from Tube Top
5 Dispense Source Volume (from Reservoir) at Result Flow Rate
6 Wait Equilibration Time

7 Move Z to top

- If Source Volume is greater than Syringe Volume, repeat steps 2-7 until Source Volume delivered

8 If SPE 215 Shake Off = TRUE, perform Shake Off

a) Move probe to edge of well

b) Move probe to center of well

c) Move Z to top

If SPE 215 Shake Off = FALSE

a) Move Z to top

Tray

1 Aspirate Source Air Gap at Air Gap Flow Rate

2 Move probe to Source Well in Source Zone

3 Lower probe into Source Well to Source Height

4 Aspirate Source Volume + Extra Volume at Source Flow Rate using Liquid Level Following if selected

5 Move Z to top

Transfer Port

1 Aspirate Source Air Gap at Air Gap Flow Rate

2 Move probe to well in Source Zone

3 Lower probe to Source Height from Tube Bottom

4 Set Transfer Port to On

5 Aspirate Source Volume + Extra Volume at Source Flow Rate

6 Set Transfer Port to Off

7 Move Z to top

DISPENSE

Tray

1 Move probe to DEC Well in DEC Zone

2 Lower probe to Result Height from Tube Top

3 Dispense Source Volume at Result Flow Rate

4 Wait Equilibration Time

5 Move Z to top

- If Source Volume is greater than Syringe Volume, repeat Aspirate (Air Gap and Extra Volume are not aspirated) and Dispense until Source Volume delivered

6 If SPE 215 Shake Off = TRUE, perform Shake Off

a) Move probe to edge of well

b) Move probe to center of well

c) Move Z to top

If SPE 215 Shake Off = FALSE

a) Move Z to top

7 Move probe to well in Inside Rinse Zone

8 Lower probe unto wells at Inside Rinse Height from Tube Bottom

9 Dispense Extra Volume + Air Gap at Result Flow Rate

10 Move Z to top

Transfer Port

1 Move probe to DEC Well in DEC Zone

2 Lower probe to Result Height from Tube Top

3 Dispense Source Volume at Result Flow Rate

4 Wait Equilibration Time

5 Move Z to top

- If Source Volume is greater than Syringe Volume, repeat Aspirate (Air Gap and Extra Volume not aspirated) and Dispense until Source Volume delivered

6 If SPE 215 Shake Off = TRUE, perform Shake Off

a) Move probe to edge of well

b) Move probe to center of well

c) Move Z to top

If SPE 215 Shake Off = FALSE

a) Move Z to top

7 Move probe to well in Inside Rinse Zone

8 Lower probe to Inside Rinse Height from Tube Bottom

9 Dispense Extra Volume + Air Gap at Result Flow Rate

10 Move Z to top

AIR PUSH

Solenoid

1 Move probe to well in Inside Rinse Zone

2 Aspirate 250 uL at 5 mL/min

3 Set Voltage On and Output Contact 1 to Close (SPE 215) or
Set Output Contact 8 to Close (ASPEC XL/XLi)

4 Wait 0.05 min (SPE 215) or wait 0.01min (ASPEC XL/XLi)

5 Set Voltage Off and Output Contact 1 to Open (SPE 215) or set Output Contact 8 to Open (ASPEC XL/XLi)

6 Move Z to top

7 Move probe to DEC Wells in DEC Zone

8 Lower probe to Air Push Height from Tube Top

9 Set Voltage On and Output Contact 1 to Close (SPE 215) or
Set Output Contact 8 to Close (ASPEC XL/XLi)

10 Wait Air Push Time

11 Set Voltage Off and Output Contact 1 to Open (SPE 215) or set Output Contact 8 to Open (ASPEC XL/XLi)

12 Wait Equilibration Time

13 Move Z to top, performing shake off (SPE 215)

14 Move probe to well in Inside Rinse Zone

15 Dispense 250 uL at 5 mL/min

Syringe

1 Move probe to DEC Well in DEC Zone

2 Move Z to top

3 Aspirate Air Gap at Aspirate Flow Rate

4 Move probe to DEC Well in DEC Zone

5 Aspirate Air Push Volume at Aspirate Flow Rate

6 Lower probe to Air Push Height from Tube Top

7 Dispense Air Push Volume at Dispense Flow Rate

8 Wait Equilibration Time
9 Move Z to top, performing shake off (SPE 215)
10 Repeat steps 4–9 until Air Push Volume is dispensed
11 Move probe to Inside Rinse Wells at Inside Rinse Zone
12 Dispense Air Gap at Dispense Flow Rate

Valve

1 Move probe to well in Inside Rinse Zone
2 Aspirate Probe to Valve Volume at 10 mL/min
3 Switch valve to gas
4 Wait 0.05 min
5 Switch valve to probe
6 Move Z to top
7 Move probe to DEC Well in DEC Zone
8 Lower probe to Air Push Height from Tube Top
9 Switch valve to gas
10 Wait Air Push Time
11 Switch valve to probe
12 Wait Equilibration Time
13 Move Z to top, performing shake off (SPE 215)
14 Move probe to well in Inside Rinse Zone
15 Dispense Probe to Valve Volume at 10 mL/min

INSIDE RINSE

1 Move probe to well in Inside Rinse Zone
2 Lower probe to Inside Rinse Height from Tube Bottom
3 Aspirate (from Reservoir) Inside Rinse Volume at Inside Rinse Flow Rate
4 Dispense Inside Rinse Volume at Inside Rinse Flow Rate
5 Move Z to top

OUTSIDE RINSE

1 Move probe to well in Outside Rinse Zone
2 Lower probe into wells at Outside Rinse Height from Tube Bottom
3 Aspirate (from Reservoir) Outside Rinse Volume at Outside Rinse Flow Rate
4 Dispense Outside Rinse Volume at Outside Rinse Flow Rate
5 Move Z top

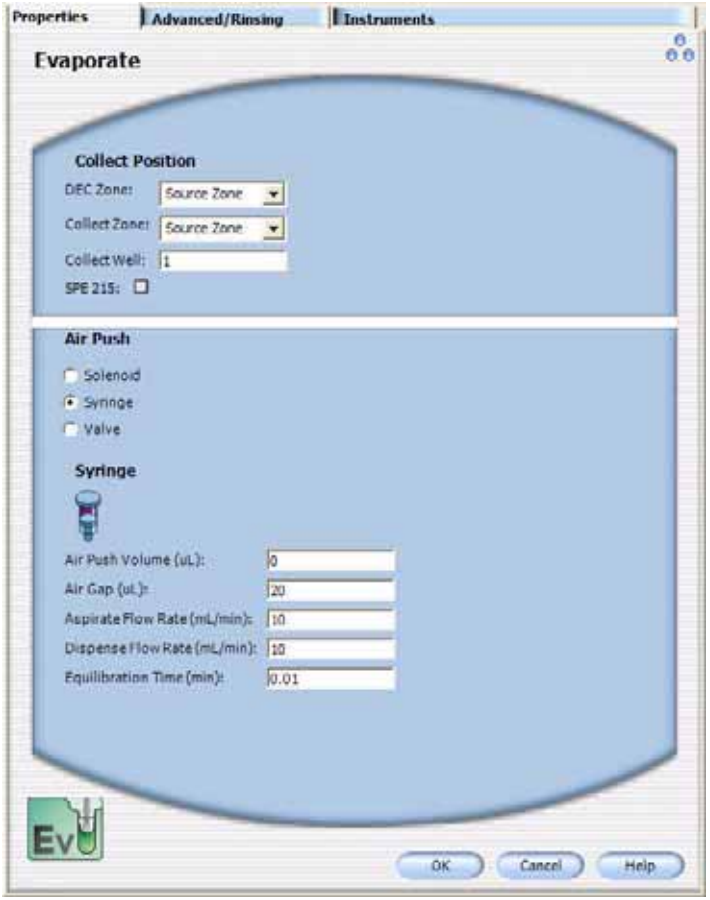
GAS/AIR PURGE

If SPE 215 = TRUE

1 Move Z to top
2 Set Voltage On and Output Contact 1 to Close
3 Wait 0.02 min
4 Set Voltage Off and Output Contact 1 to Open
5 Move Z to top

Evaporate

This task evaporates liquids in the collect wells by passing pressurized gas or air from the syringes into the wells with the mobile rack positioned over the drain.



For more information about the properties on each tab, see:

Evaporate - Properties on page D-44

Evaporate - Advanced/Rinsing on page D-46

Evaporate - Instruments on page D-47

Evaporate - Sequence of Steps on page D-47

Evaporate - Properties

Property Name	*Brief Description*	*Default Value*
DEC Zone	The zone to which the Reservoir Volume is delivered.	
Collect Zone	The zone where the evaporation will occur.	
Collect Well	The well where the evaporation will occur. When using a multiple probe instrument, type #x where x is a value defined in the Sample List.	1
SPE 215	The SPE 215 Shake Off unseals the seal foot from the mobile rack.	
Air Push	Select Solenoid, Syringe, or Valve. Solenoid option only valid for the SPE 215, ASPEC XL, and ASPEC XLi. Valve option only valid for the GX-271/274 ASPEC and ASPEC XL4.	Syringe
Solenoid Air Push Time	The length of time the air is dispensed from the solenoid or gas valve(s).	0.01 min
Solenoid Equilibration Time	Time the program waits after a solenoid air push before moving out of the well.	0.01 min
Syringe Air Push Volume	The quantity of air dispensed through the probe.	0 uL
Syringe Air Gap	The quantity of an air gap.	20 uL

Evaporate - Properties Table *(Page 1 of 2)*

Evaporate - Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Syringe Aspirate Flow Rate	The speed at which the Air Push Volume moves into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	10 mL/min
Syringe Dispense Flow Rate	The speed at which the Air Push Volume moves out of the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	10 mL/min
Syringe Equilibration Time	Time the program waits after a syringe air push before moving out of the well.	0.01 min
Valve Probe to Valve Volume	Transfer tubing volume between the probe and the valve. Volume of an air gap aspirated to clear the transfer tubing before performing the air push. The volume should be less than the syringe volume. Default value is the recommended value for GX-27X ASPEC. Recommended value for ASPEC XL4 is 1100 uL.	4100 uL
Valve Air Push Time	The length of time the air is dispensed from the valve.	0.01 min
Valve Equilibration Time	Time the program waits after a valve air push before moving out of the well.	0.01 min

Evaporate - Properties Table *(Page 2 of 2)*

Evaporate - Advanced/Rinsing

Property Name	*Brief Description*	*Default Value*
Air Push Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Top when performing the air push.	2 mm
Inside Rinse Zone	The zone to which the Inside Rinse Volume is delivered.	Inside Rinse
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
Inside Volume	The quantity of liquid used to rinse the inside of the probe.	250 uL
Inside Flow Rate	The speed at which the Inside Rinse Volume moves out of the probe and into the inside rinse position in the rinse station. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	10 mL/min
Outside Volume	The quantity of liquid used to rinse the outside of the probe.	500 uL
Outside Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	10 mL/min
Inside Rinse Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Bottom for rinsing the probe at the inside rinse position in the rinse station.	0 mm
Outside Rinse Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Bottom for rinsing the probe at the inside rinse position in the rinse station.	0 mm

Evaporate - Instruments

Property Name	*Brief Description*	*Default Value*
Liquid Handler	The liquid handler that the Task will affect.	
Pump	The pump or VPS that the Task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	

Evaporate - Instruments

Evaporate - Sequence of Steps

The following is an overview for the sequence of steps.

1 **Move Mobile Rack** on page D-47
2 **Air Push** on page D-48
3 **Inside Rinse** on page D-50
4 **Outside Rinse** on page D-50
5 **Gas/Air Purge** on page D-50

MOVE MOBILE RACK

1 Move Z to top
2 Move mobile rack (DEC Zone) over drain

AIR PUSH

Solenoid

1 Move probe to well in Inside Rinse Zone
2 Aspirate 250 uL at 5 mL/min
3 Set Voltage On and Output Contact 1 to Close (SPE 215) or
Set Output Contact 8 to Close (ASPEC XL/XLi)
4 Wait 0.05 min (SPE 215) or wait 0.01min (ASPEC XL/XLi)
5 Set Voltage Off and Output Contact 1 to Open (SPE 215) or set Output Contact 8 to Open (ASPEC XL/XLi)
6 Move Z to top
7 Move probe to DEC Wells in DEC Zone
8 Lower probe to Air Push Height from Tube Top
9 Set Voltage On and Output Contact 1 to Close (SPE 215) or
Set Output Contact 8 to Close (ASPEC XL/XLi)
10 Wait Air Push Time
11 Set Voltage Off and Output Contact 1 to Open (SPE 215) or set Output Contact 8 to Open (ASPEC XL/XLi)
12 Wait Equilibration Time
13 Move Z to top, performing shake off (SPE 215)
14 Move probe to well in Inside Rinse Zone
15 Dispense 250 uL at 5 mL/min

Syringe

1 Move probe to DEC Well in DEC Zone
2 Move Z to top

3 Aspirate Air Gap at Aspirate Flow Rate
4 Move probe to DEC Well in DEC Zone
5 Aspirate Air Push Volume at Aspirate Flow Rate
6 Lower probe to Air Push Height from Tube Top
7 Dispense Air Push Volume at Dispense Flow Rate
8 Wait Equilibration Time
9 Move Z to top, performing shake off (SPE 215)
10 Repeat steps 4–9 until Air Push Volume is dispensed
11 Move probe to Inside Rinse Wells at Inside Rinse Zone
12 Dispense Air Gap at Dispense Flow Rate

Valve

1 Move probe to well in Inside Rinse Zone
2 Aspirate Probe to Valve Volume at 10 mL/min
3 Switch valve to gas
4 Wait 0.05 min
5 Switch valve to probe
6 Move Z to top
7 Move probe to DEC Well in DEC Zone
8 Lower probe to Air Push Height from Tube Top
9 Switch valve to gas
10 Wait Air Push Time
11 Switch valve to probe

12 Wait Equilibration Time
13 Move Z to top, performing shake off (SPE 215)
14 Move probe to well in Inside Rinse Zone
15 Dispense Probe to Valve Volume at 10 mL/min

INSIDE RINSE

1 Move probe to well in Inside Rinse Zone
2 Lower probe to Inside Rinse Height from Tube Bottom
3 Aspirate (from Reservoir) Inside Rinse Volume at Inside Rinse Flow Rate
4 Dispense Inside Rinse Volume at Inside Rinse Flow Rate
5 Move Z to top

OUTSIDE RINSE

1 Move probe to well in Outside Rinse Zone
2 Lower probe into wells at Outside Rinse Height from Tube Bottom
3 Aspirate (from Reservoir) Outside Rinse Volume at Outside Rinse Flow Rate
4 Dispense Outside Rinse Volume at Outside Rinse Flow Rate
5 Move Z top

GAS/AIR PURGE

If SPE 215 = TRUE

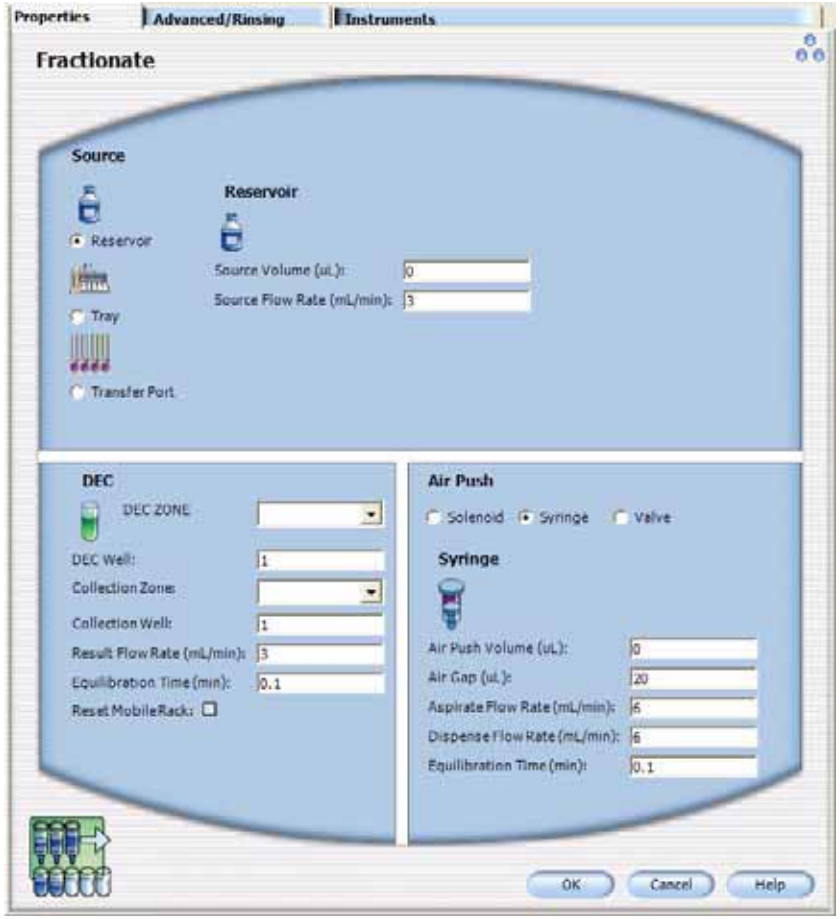
1 Move Z to top
2 Set Voltage On and Output Contact 1 to Close
3 Wait 0.02 min

4 Set Voltage Off and Output Contact 1 to Open

5 Move Z to top

Fractionate

If multiple analytes of interest will be collected, use this task to aspirate the specified volume from the reservoir, tray, or transfer ports and then dispense it to the DEC with the mobile rack positioned over the specified collect zone.



For more information about the properties on each tab, see:

Fractionate - Properties on page D-53

Fractionate - Advanced/Rinsing on page D-57

Fractionate - Instruments on page D-59

Fractionate - Sequence of Steps on page D-60

Fractionate - Properties

Property Name	*Brief Description*	*Default Value*
Source	Select Reservoir, Tray, or Transfer Port.	Reservoir
Reservoir Source Volume	The quantity of a sample.	0 uL
Reservoir Source Flow Rate	The speed at which the Source Volume moves into and out of the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	3 mL/min
Tray Source Zone	The zone from which the Source Volume is drawn.	
Tray Source Well	The well in the Source Zone from which the Source Volume is drawn. When using a multiple probe instrument, type #x where x is a value defined in the Sample List.	1
Tray Source Volume	The quantity of a sample.	0 uL
Tray Extra Volume	An additional volume to the Source Volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/reservoir solvent and the Source Volume.	0 uL
Tray Source Air Gap	The quantity of the air gap aspirated before the Source Volume.	50 uL
Tray Source Flow Rate	The speed at which the Source Volume and Extra Volume move into and out of the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	3 mL/min

Fractionate - Properties Table *(Page 1 of 5)*

Fractionate - Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Tray Air Gap Flow Rate	The speed at which the Source Air Gap moves into and out of the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	1 mL/min
Transfer Port Source Zone	The zone from which the Source Volume is drawn.	
Transfer Port Transfer Port	Select the Transfer Port to activate for the task.	A
Transfer Port Source Volume	The quantity of a sample.	0 uL
Transfer Port Extra Volume	An additional volume to the Source Volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/reservoir solvent and the Source Volume.	0 uL
Transfer Port Source Air Gap	The quantity of the air gap aspirated before the Source Volume.	50 uL
Transfer Port Source Flow Rate	The speed at which the Source Volume and Extra Volume move into and out of the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	3 mL/min
Transfer Port Air Gap Flow Rate	The speed at which the Source Air Gap moves into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	1 mL/min

Fractionate - Properties Table *(Page 2 of 5)*

Fractionate - Properties (Continued)

Property Name	*Brief Description*	*Default Value*
DEC Zone	The zone to which the Source Volume is delivered.	
DEC Well	The well in the DEC Zone to which the Source Volume is delivered. When using a multiple probe instrument, type #x where x is a value defined in the Sample List.	1
Collection Zone	The zone where the analytes of interest will be collected.	
Collection Well	The well where the analyte of interest will be collected. When using a multiple probe instrument, type #x where x is a value defined in the Sample List.	1
Result Flow Rate	The speed at which the Source Volume moves out of the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	3 mL/min
Equilibration Time	Time the program waits after each dispense before moving out of the well.	0.1 min
Reset Mobile Rack	The reset mobile rack moves the mobile rack over the drain.	
Air Push	Select Solenoid, Syringe, or Valve. Solenoid option only valid for the ASPEC XL and ASPEC XLi. Valve option only valid for the GX-271/274 ASPEC and ASPEC XL4.	Syringe
Solenoid Air Push Time	The length of time the air is dispensed from the solenoid or gas valve(s).	0.01 min

Fractionate - Properties Table *(Page 3 of 5)*

Fractionate - Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Solenoid Equilibration Time	Time the program waits after a solenoid air push before moving out of the well.	0.1 min
Syringe Air Push Volume	The quantity of air dispensed through the probe.	0 uL
Syringe Air Gap	The quantity of an air gap.	20 uL
Syringe Aspirate Flow Rate	The speed at which the Air Push Volume moves into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	6 mL/min
Syringe Dispense Flow Rate	The speed at which the Air Push Volume moves out of the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	6 mL/min
Syringe Equilibration Time	Time the program waits after a syringe air push before moving out of the well.	0.1 min
Valve Probe to Valve Volume	Transfer tubing volume between the probe and the valve. Volume of an air gap aspirated to clear the transfer tubing before performing the air push. The volume should be less than the syringe volume. Default value is the recommended value for GX-27X ASPEC. Recommended value for ASPEC XL4 is 1100 uL.	4100 uL

Fractionate - Properties Table *(Page 4 of 5)*

Fractionate - Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Valve Air Push Time	The length of time the air is dispensed from the valve.	0.01 min
Valve Equilibration Time	Time the program waits after a valve air push before moving out of the well.	0.1 min

Fractionate - Properties Table *(Page 5 of 5)*

Fractionate - Advanced/Rinsing

Property Name	*Brief Description*	*Default Value*
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated. This selection changes the reference point for the Source Height to the liquid surface. Initial Volumes should be set in the Sample List when using this option.	
Liquid Level Detection	When selected, the probe will stop when the instrument detects the liquid surface. This selection changes the reference point for the Source Height to the height at which the liquid was detected. **Note:** If no liquid is detected, the probe will go to the bottom of the tubes. This option can only be used on instruments which support Liquid Level Detection.	
Sensitivity	Sensitivity is a percent (0 - 100%) used to detect liquid when Liquid Level Detection is used. A low setting is the most sensitive and higher settings are less sensitive.	1

Fractionate - Advanced/Rinsing Table *(Page 1 of 3)*

Fractionate - Advanced/Rinsing (Continued)

Property Name	*Brief Description*	*Default Value*
Source Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from a defined reference point (Tube Bottom unless Liquid Level Detection or Liquid Level Following is selected) when aspirating the Source Volume.	2 mm
Result Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Top when delivering to the DEC Zone.	-18 mm
Air Push Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Top when performing the air push.	-18 mm
Inside Rinse Zone	The zone to which the Inside Rinse Volume is delivered.	Inside Rinse
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
Inside Volume	The quantity of liquid used to rinse the inside of the probe.	500 uL
Inside Flow Rate	The speed at which the Inside Rinse Volume moves out of the probe and into the inside rinse position in the rinse station. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	10 mL/min
Outside Volume	The quantity of liquid used to rinse the outside of the probe.	1000 uL
Outside Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	10 mL/min

Fractionate - Advanced/Rinsing Table *(Page 2 of 3)*

Fractionate - Advanced/Rinsing (Continued)

Property Name	*Brief Description*	*Default Value*
Inside Rinse Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Bottom for rinsing the probe at the inside rinse position in the rinse station.	0 mm
Outside Rinse Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Bottom for rinsing the probe at the inside rinse position in the rinse station.	0 mm

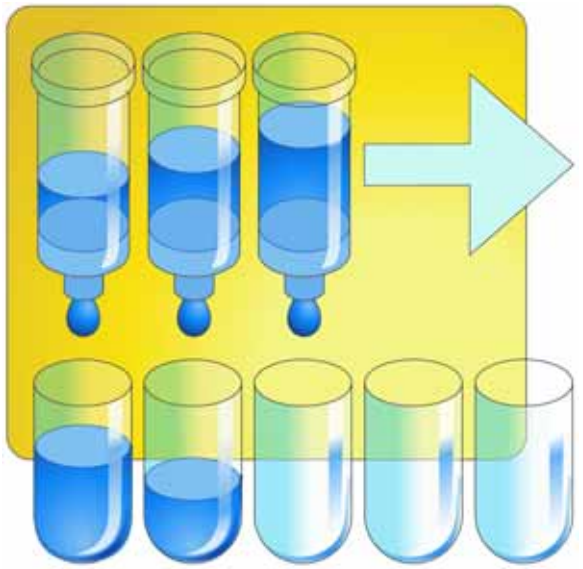
Fractionate - Advanced/Rinsing Table *(Page 3 of 3)*

Fractionate - Instruments

Property Name	*Brief Description*	*Default Value*
Liquid Handler	The liquid handler that the Task will affect.	
Pump	The pump or VPS that the Task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	

Fractionate - Instruments

Fractionate - Sequence of Steps



The following is an overview for the sequence of steps.

1 **Move Mobile Rack** on page D-60
2 **Aspirate** on page D-60
3 **Dispense** on page D-61
4 **Air Push** on page D-63
5 **Inside Rinse** on page D-65
6 **Outside Rinse** on page D-65
7 **Gas/Air Purge** on page D-65

MOVE MOBILE RACK

1 Move Z to top
2 Move mobile rack (DEC Zone) over the specified collect zone

ASPIRATE

Reservoir

1 Move Z to top
2 Aspirate Source Volume (from Reservoir) at Source Flow Rate
3 Move probe to DEC Well in DEC Zone
4 Lower probe to Result Height from Tube Top
5 Dispense Source Volume (from Reservoir) at Result Flow Rate

6 Wait Equilibration Time

7 Move Z to top

- If Source Volume is greater than Syringe Volume, repeat steps 2-7 until Source Volume delivered

Tray

1 Aspirate Source Air Gap at Air Gap Flow Rate

2 Move probe to Source Well in Source Zone

3 Lower probe into Source Well to Source Height

4 Aspirate Source Volume + Extra Volume at Source Flow Rate using Liquid Level Following if selected

5 Move Z to top

Transfer Port

1 Aspirate Source Air Gap at Air Gap Flow Rate

2 Move probe to Source Well in Source Zone

3 Lower probe to Source Height from Tube Bottom

4 Aspirate Source Volume + Extra Volume at Source Flow Rate

5 Move Z to top

DISPENSE

Tray

1 Move probe to DEC Well in DEC Zone

2 Lower probe to Result Height from Tube Top

3 Dispense Source Volume at Result Flow Rate

4 Wait Equilibration Time
5 Move Z to top
6 Move probe to well in Inside Rinse Zone
7 Lower probe to Inside Rinse Height from Tube Bottom
8 Dispense Extra Volume + Air Gap at Result Flow Rate
9 Move Z to top

Transfer Port

1 Move probe to DEC Well in DEC Zone
2 Lower probe to Result Height from Tube Top
3 Dispense Source Volume at Result Flow Rate
4 Wait Equilibration Time
5 Move Z to top
- If Source Volume is greater than Syringe Volume, repeat Aspirate (Air Gap and Extra Volume are not aspirated) and Dispense until Source Volume delivered

6 Move probe to Inside Rinse Zone in Inside Rinse Zone
7 Lower probe to Inside Rinse Height from Tube Bottom
8 Dispense Extra Volume + Air Gap at Result Flow Rate
9 Move Z to top

AIR PUSH

Solenoid

1 Move probe to well in Inside Rinse Zone
2 Aspirate 250 uL at 5 mL/min
3 Set Voltage On and Output Contact 1 to Close (SPE 215) or
Set Output Contact 8 to Close (ASPEC XL/XLi)
4 Wait 0.05 min (SPE 215) or wait 0.01min (ASPEC XL/XLi)
5 Set Voltage Off and Output Contact 1 to Open (SPE 215) or set Output Contact 8 to Open (ASPEC XL/XLi)
6 Move Z to top
7 Move probe to DEC Wells in DEC Zone
8 Lower probe to Air Push Height from Tube Top
9 Set Voltage On and Output Contact 1 to Close (SPE 215) or
Set Output Contact 8 to Close (ASPEC XL/XLi)
10 Wait Air Push Time
11 Set Voltage Off and Output Contact 1 to Open (SPE 215) or set Output Contact 8 to Open (ASPEC XL/XLi)
12 Wait Equilibration Time
13 Move Z to top, performing shake off (SPE 215)
14 Move probe to well in Inside Rinse Zone
15 Dispense 250 uL at 5 mL/min

Syringe

1 Move probe to DEC Well in DEC Zone
2 Move Z to top

3 Aspirate Air Gap at Aspirate Flow Rate
4 Move probe to DEC Well in DEC Zone
5 Aspirate Air Push Volume at Aspirate Flow Rate
6 Lower probe to Air Push Height from Tube Top
7 Dispense Air Push Volume at Dispense Flow Rate
8 Wait Equilibration Time
9 Move Z to top, performing shake off (SPE 215)
10 Repeat steps 4–9 until Air Push Volume is dispensed
11 Move probe to Inside Rinse Wells at Inside Rinse Zone
12 Dispense Air Gap at Dispense Flow Rate

Valve

1 Move probe to well in Inside Rinse Zone
2 Aspirate Probe to Valve Volume at 10 mL/min
3 Switch valve to gas
4 Wait 0.05 min
5 Switch valve to probe
6 Move Z to top
7 Move probe to DEC Well in DEC Zone
8 Lower probe to Air Push Height from Tube Top
9 Switch valve to gas
10 Wait Air Push Time
11 Switch valve to probe

12 Wait Equilibration Time

13 Move Z to top, performing shake off (SPE 215)

14 Move probe to well in Inside Rinse Zone

15 Dispense Probe to Valve Volume at 10 mL/min

INSIDE RINSE

1 Move probe to well in Inside Rinse Zone

2 Lower probe to Inside Rinse Height from Tube Bottom

3 Aspirate (from Reservoir) Inside Rinse Volume at Inside Rinse Flow Rate

4 Dispense Inside Rinse Volume at Inside Rinse Flow Rate

5 Move Z to top

OUTSIDE RINSE

1 Move probe to well in Outside Rinse Zone

2 Lower probe into wells at Outside Rinse Height from Tube Bottom

3 Aspirate (from Reservoir) Outside Rinse Volume at Outside Rinse Flow Rate

4 Dispense Outside Rinse Volume at Outside Rinse Flow Rate

5 Move Z top

GAS/AIR PURGE

If SPE 215 = TRUE

1 Move Z to top

2 Set Voltage On and Output Contact 1 to Close

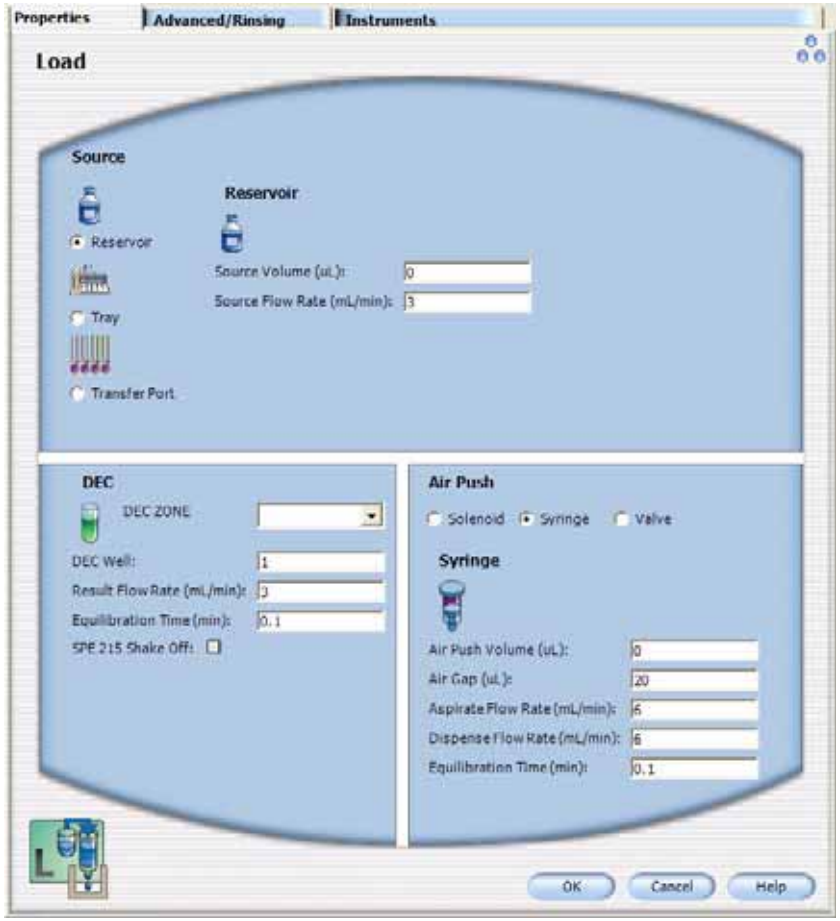
3 Wait 0.02 min

4 Set Voltage Off and Output Contact 1 to Open

5 Move Z to top

Load

If analytes of interest bind to the column, use this task to aspirate a specified volume of liquid (source) from the reservoir, tray, or transfer ports and then dispense the volume to the wells of the DEC zone with the mobile rack positioned over the drain.



For more information about the properties on each tab, see:

Load - Properties on page D-68

Load - Advanced/Rinsing on page D-72

Load - Instruments on page D-74

Load - Sequence of Steps on page D-75

Load - Properties

Property Name	*Brief Description*	*Default Value*
Source	Select Reservoir, Tray, or Transfer Port.	Reservoir
Reservoir Source Volume	The quantity of a sample.	0 uL
Reservoir Source Flow Rate	The speed at which the Source Volume moves into and out of the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	3 mL/min
Tray Source Zone	The zone from which the Source Volume is drawn.	
Tray Source Well	The well in the Source Zone from which the Source Volume is drawn. When using a multiple probe instrument, type #x where x is a value defined in the Sample List.	1
Tray Source Volume	The quantity of a sample.	0 uL
Tray Extra Volume	An additional volume to the Source Volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/reservoir solvent and the Source Volume.	0 uL
Tray Source Air Gap	The quantity of the air gap aspirated before the Source Volume.	50 uL

Load - Properties Table *(Page 1 of 5)*

Load - Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Tray Source Flow Rate	The speed at which the Source Volume and Extra Volume move into and out of the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	3 mL/min
Tray Air Gap Flow Rate	The speed at which the Source Air Gap moves into and out of the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	1 mL/min
Transfer Port Source Zone	The zone from which the Source Volume is drawn.	
Transfer Port Transfer Port	Select the Transfer Port to activate for the task.	A
Transfer Port Source Volume	The quantity of a sample.	0 uL
Transfer Port Extra Volume	An additional volume to the Source Volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/reservoir solvent and the Source Volume.	0 uL
Transfer Port Source Air Gap	The quantity of the air gap aspirated before the Source Volume.	50 uL
Transfer Port Source Flow Rate	The speed at which the Source Volume and Extra Volume move into and out of the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	3 mL/min

Load - Properties Table *(Page 2 of 5)*

Load - Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Transfer Port Air Gap Flow Rate	The speed at which the Source Air Gap moves into and out of the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	1 mL/min
DEC Zone	The zone to which the Reservoir Volume is delivered.	
DEC Well	The well in the DEC Zone to which the Source Volume is delivered. When using a multiple probe instrument, type #x where x is a value defined in the Sample List.	1
Result Flow Rate	The speed at which the Source Volume moves out of probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	3 mL/min
Equilibration Time	Time the program waits after each dispense before moving out of the well.	0.1 min
SPE 215 Shake Off	The SPE 215 Shake Off unseals the seal foot from the mobile rack.	
Air Push	Select Solenoid, Syringe, or Valve. Solenoid option only valid for the SPE 215, ASPEC XL, and ASPEC XLi. Valve option only valid for the GX-271/274 ASPEC and ASPEC XL4.	Syringe
Solenoid Air Push Time	The length of time the air is dispensed from the solenoid or gas valve(s).	0.01 min

Load - Properties Table *(Page 3 of 5)*

Load - Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Solenoid Equilibration Time	Time the program waits after a solenoid air push before moving out of the well.	0.1 min
Syringe Air Push Volume	The quantity of air dispensed through the probe.	0 uL
Syringe Air Gap	The quantity of an air gap.	20 uL
Syringe Aspirate Flow Rate	The speed at which the Air Push Volume moves into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	6 mL/min
Syringe Dispense Flow Rate	The speed at which the Air Push Volume moves out of the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	6 mL/min
Syringe Equilibration Time	Time the program waits after a syringe air push before moving out of the well.	0.1 min
Valve Probe to Valve Volume	Transfer tubing volume between the probe and the valve. Volume of an air gap aspirated to clear the transfer tubing before performing the air push. The volume should be less than the syringe volume. Default value is the recommended value for GX-27X ASPEC. Recommended value for ASPEC XL4 is 1100 uL.	4100 uL

Load - Properties Table *(Page 4 of 5)*

Load - Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Valve Air Push Time	The length of time the air is dispensed from the valve.	0.01 min
Valve Equilibration Time	Time the program waits after a valve air push before moving out of the well.	0.1 min

Load - Properties Table *(Page 5 of 5)*

Load - Advanced/Rinsing

Property Name	*Brief Description*	*Default Value*
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated. This selection changes the reference point for the Source Height to the liquid surface. Initial Volumes should be set in the Sample List when using this option.	
Liquid Level Detection	When selected, the probe will stop when the instrument detects the liquid surface. This selection changes the reference point for the Source Height to the height at which the liquid was detected. **Note:** If no liquid is detected, the probe will go to the bottom of the tubes. This option can only be used on instruments which support Liquid Level Detection.	
Sensitivity	Sensitivity is a percent (0 - 100%) used to detect liquid when Liquid Level Detection is used. A low setting is the most sensitive and higher settings are less sensitive.	1

Load - Advanced/Rinsing Table *(Page 1 of 3)*

Load - Advanced/Rinsing (Continued)

Property Name	*Brief Description*	*Default Value*
Source Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from a defined reference point (Tube Bottom unless Liquid Level Detection or Liquid Level Following is selected) when aspirating the Source Volume.	2 mm
Result Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Top when delivering to the DEC Zone.	-18 mm
Air Push Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Top when performing the air push.	-18 mm
Inside Rinse Zone	The zone to which the Inside Rinse Volume is delivered.	Inside Rinse
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
Inside Volume	The quantity of liquid used to rinse the inside of the probe.	500 uL
Inside Flow Rate	The speed at which the Inside Rinse Volume moves out of the probe and into the inside rinse position in the rinse station. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	10 mL/min
Outside Volume	The quantity of liquid used to rinse the outside of the probe.	1000 uL
Outside Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	10 mL/min

Load - Advanced/Rinsing Table *(Page 2 of 3)*

Load - Advanced/Rinsing (Continued)

Property Name	*Brief Description*	*Default Value*
Inside Rinse Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Bottom for rinsing the probe at the inside rinse position in the rinse station.	0 mm
Outside Rinse Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Bottom for rinsing the probe at the inside rinse position in the rinse station.	0 mm

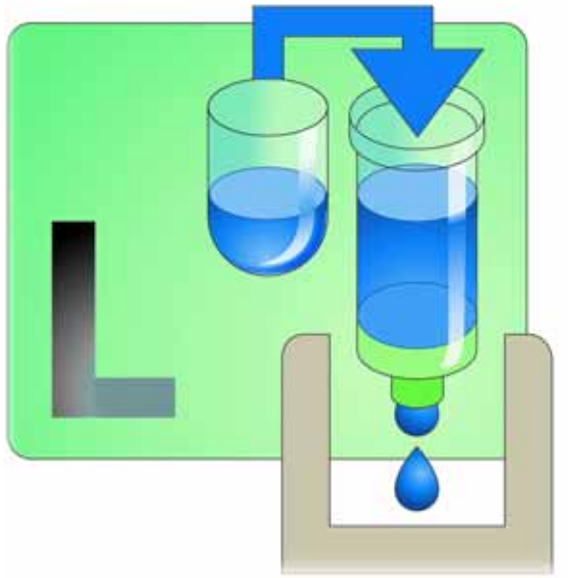
Load - Advanced/Rinsing Table ***(Page 3 of 3)***

Load - Instruments

Property Name	*Brief Description*	*Default Value*
Liquid Handler	The liquid handler that the Task will affect.	
Pump	The pump or VPS that the Task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	

Load - Instruments

Load - Sequence of Steps



The following is an overview for the sequence of steps.

1 **Move Mobile Rack** on page D-75
2 **Aspirate** on page D-75
3 **Dispense** on page D-77
4 **Air Push** on page D-79
5 **Inside Rinse** on page D-81
6 **Outside Rinse** on page D-81
7 **Gas/Air Purge** on page D-81

MOVE MOBILE RACK

1 Move Z to top
2 Move mobile rack (DEC Zone) over drain

ASPIRATE

Reservoir

1 Move Z to top
2 Aspirate Source Volume (from Reservoir) at Source Flow Rate
3 Move probe to DEC Well in DEC Zone
4 Lower probe to Result Height from Tube Top
5 Dispense Source Volume (from Reservoir) at Result Flow Rate
6 Wait Equilibration Time

7 Move Z to top

- If Source Volume is greater than Syringe Volume, repeat steps 2-7 until Source Volume delivered

8 If SPE 215 = TRUE, perform Shake Off

a) Move probe to edge of well

b) Move probe to center of well

c) Move Z to top

If SPE 215 = FALSE

a) Move Z to top

Tray

1 Aspirate Source Air Gap at Air Gap Flow Rate

2 Move probe to Source Well in Source Zone

3 Lower probe into Source Well to Source Height

4 Aspirate Source Volume + Extra Volume at Source Flow Rate using Liquid Level Following if selected

5 Move Z to top

Transfer Port

1 Aspirate Source Air Gap at Air Gap Flow Rate

2 Move probe to well in Source Zone

3 Lower probe to Source Height from Tube Bottom

4 Set Transfer Port to On

5 Aspirate Source Volume + Extra Volume at Source Flow Rate

6 Set Transfer Port to Off

7 Move Z to top

DISPENSE

Tray

1 Move probe to DEC Well in DEC Zone

2 Lower probe to Result Height from Tube Top

3 Dispense Source Volume at Result Flow Rate

4 Wait Equilibration Time

5 Move Z to top

- If Source Volume is greater than Syringe Volume, repeat Aspirate (Air Gap and Extra Volume are not aspirated) and Dispense until Source Volume delivered

6 If SPE 215 = TRUE, perform Shake Off

   a) Move probe to edge of well

   b) Move probe to center of well

   c) Move Z to top

If SPE 215 = FALSE

   a) Move Z to top

7 Move probe to well in Inside Rinse Zone

8 Lower probe to Inside Rinse Height from Tube Bottom

9 Dispense Extra Volume + Air Gap at Result Flow Rate

10 Move Z to top

Transfer Port

1 Move probe to DEC Well in DEC Zone

2 Lower probe to Result Height from Tube Top

3 Dispense Source Volume at Result Flow Rate

4 Wait Equilibration Time

5 Move Z to top

- If Source Volume is greater than Syringe Volume, repeat Aspirate (Air Gap and Extra Volume not aspirated) and Dispense until Source Volume delivered

6 If SPE 215 = TRUE, perform Shake Off

   a) Move probe to edge of well

   b) Move probe to center of well

   c) Move Z to top

If SPE 215 = FALSE

   a) Move Z to top

7 Move probe to well in Inside Rinse Zone

8 Lower probe to Inside Rinse Height from Tube Bottom

9 Dispense Extra Volume + Air Gap at Result Flow Rate

10 Move Z to top

AIR PUSH

Solenoid

1 Move probe to well in Inside Rinse Zone
2 Aspirate 250 uL at 5 mL/min
3 Set Voltage On and Output Contact 1 to Close (SPE 215) or
Set Output Contact 8 to Close (ASPEC XL/XLi)
4 Wait 0.05 min (SPE 215) or wait 0.01min (ASPEC XL/XLi)
5 Set Voltage Off and Output Contact 1 to Open (SPE 215) or set Output Contact 8 to Open (ASPEC XL/XLi)
6 Move Z to top
7 Move probe to DEC Wells in DEC Zone
8 Lower probe to Air Push Height from Tube Top
9 Set Voltage On and Output Contact 1 to Close (SPE 215) or
Set Output Contact 8 to Close (ASPEC XL/XLi)
10 Wait Air Push Time
11 Set Voltage Off and Output Contact 1 to Open (SPE 215) or set Output Contact 8 to Open (ASPEC XL/XLi)
12 Wait Equilibration Time
13 Move Z to top, performing shake off (SPE 215)
14 Move probe to well in Inside Rinse Zone
15 Dispense 250 uL at 5 mL/min

Syringe

1 Move probe to DEC Well in DEC Zone
2 Move Z to top

3 Aspirate Air Gap at Aspirate Flow Rate
4 Move probe to DEC Well in DEC Zone
5 Aspirate Air Push Volume at Aspirate Flow Rate
6 Lower probe to Air Push Height from Tube Top
7 Dispense Air Push Volume at Dispense Flow Rate
8 Wait Equilibration Time
9 Move Z to top, performing shake off (SPE 215)
10 Repeat steps 4–9 until Air Push Volume is dispensed
11 Move probe to Inside Rinse Wells at Inside Rinse Zone
12 Dispense Air Gap at Dispense Flow Rate

Valve

1 Move probe to well in Inside Rinse Zone
2 Aspirate Probe to Valve Volume at 10 mL/min
3 Switch valve to gas
4 Wait 0.05 min
5 Switch valve to probe
6 Move Z to top
7 Move probe to DEC Well in DEC Zone
8 Lower probe to Air Push Height from Tube Top
9 Switch valve to gas
10 Wait Air Push Time
11 Switch valve to probe

12 Wait Equilibration Time
13 Move Z to top, performing shake off (SPE 215)
14 Move probe to well in Inside Rinse Zone
15 Dispense Probe to Valve Volume at 10 mL/min

INSIDE RINSE

1 Move probe to well in Inside Rinse Zone
2 Lower probe to Inside Rinse Height from Tube Bottom
3 Aspirate (from Reservoir) Inside Rinse Volume at Inside Rinse Flow Rate
4 Dispense Inside Rinse Volume at Inside Rinse Flow Rate
5 Move Z to top

OUTSIDE RINSE

1 Move probe to well in Outside Rinse Zone
2 Lower probe into wells at Outside Rinse Height from Tube Bottom
3 Aspirate (from Reservoir) Outside Rinse Volume at Outside Rinse Flow Rate
4 Dispense Outside Rinse Volume at Outside Rinse Flow Rate
5 Move Z top

GAS/AIR PURGE

If SPE 215 = TRUE

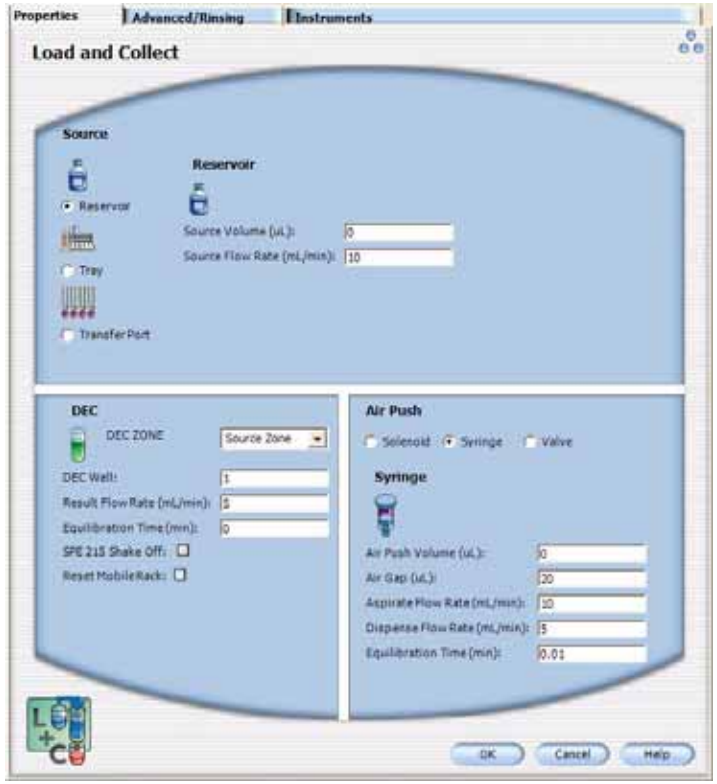
1 Move Z to top
2 Set Voltage On and Output Contact 1 to Close
3 Wait 0.02 min

4 Set Voltage Off and Output Contact 1 to Open

5 Move Z to top

Load and Collect

If the contaminants bind to the column and the analytes of interest pass through the column into the collect zone, use this task to aspirate the specified volume of liquid (source) from the reservoir, tray, or transfer ports and then dispense the volume to the wells of the DEC zone with the mobile rack over the collect position.



For more information about the properties on each tab, see:

Load and Collect - Properties on page D-84

Load and Collect - Advanced/Rinsing on page D-88

Load and Collect - Instruments on page D-90

Load and Collect - Sequence of Steps on page D-91

Load and Collect - Properties

Property Name	*Brief Description*	*Default Value*
Source	Select Reservoir, Tray, or Transfer Port.	Reservoir
Reservoir Source Volume	The quantity of a sample.	0 uL
Reservoir Source Flow Rate	The speed at which the Source Volume moves into and out of the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	10 mL/min
Tray Source Zone	The zone from which the Source Volume is drawn.	
Tray Source Well	The well in the Source Zone from which the Source Volume is drawn. When using a multiple probe instrument, type #x where x is a value defined in the Sample List.	1
Tray Source Volume	The quantity of a sample.	0 uL
Tray Extra Volume	An additional volume to the Source Volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/reservoir solvent and the Source Volume.	0 uL
Tray Source Air Gap	The quantity of the air gap aspirated before the Source Volume.	25 uL

Load and Collect - Properties Table *(Page 1 of 5)*

Load and Collect - Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Tray Source Flow Rate	The speed at which the Source Volume and Extra Volume move into and out of the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	5 mL/min
Tray Air Gap Flow Rate	The speed at which the Source Air Gap moves into and out of the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	0.3 mL/min
Transfer Port Source Zone	The zone from which the Source Volume is drawn.	
Transfer Port Transfer Port	Select the Transfer Port to activate for the task.	A
Transfer Port Source Volume	The quantity of a sample.	0 uL
Transfer Port Extra Volume	An additional volume to the Source Volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/reservoir solvent and the Source Volume.	0 uL
Transfer Port Source Air Gap	The quantity of the air gap aspirated before the Source Volume.	25 uL
Transfer Port Source Flow Rate	The speed at which the Source Volume and Extra Volume move into and out of the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	5 mL/min

Load and Collect - Properties Table *(Page 2 of 5)*

Load and Collect - Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Transfer Port Air Gap Flow Rate	The speed at which the Source Air Gap moves into and out of the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	0.3 mL/min
DEC Zone	The zone to which the Reservoir Volume is delivered.	
DEC Well	The well in the DEC Zone to which the Source Volume is delivered. When using a multiple probe instrument, type #x where x is a value defined in the Sample List.	1
Result Flow Rate	The speed at which the Source Volume moves out of the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	5 mL/min
Equilibration Time	Time the program waits after each dispense before moving out of the well.	0 min
Reset Mobile Rack	The reset mobile rack moves the mobile rack over the drain.	
Air Push	Select Solenoid, Syringe, or Valve. Solenoid option only valid for the SPE 215, ASPEC XL, and ASPEC XLi. Valve option only valid for the GX-271/274 ASPEC and ASPEC XL4.	Syringe
Solenoid Air Push Time	The length of time the air is dispensed from the solenoid or gas valve(s).	0.01 min

Load and Collect - Properties Table *(Page 3 of 5)*

Load and Collect - Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Solenoid Equilibration Time	Time the program waits after a solenoid air push before moving out of the well.	0.01 min
Syringe Air Push Volume	The quantity of air dispensed through the probe.	0 uL
Syringe Air Gap	The quantity of an air gap.	20 uL
Syringe Aspirate Flow Rate	The speed at which the Air Push Volume moves into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	10 mL/min
Syringe Dispense Flow Rate	The speed at which the Air Push Volume moves out of probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	5 mL/min
Syringe Equilibration Time	Time the program waits after a syringe air push before moving out of the well.	0.01 min
Valve Probe to Valve Volume	Transfer tubing volume between the probe and the valve. Volume of an air gap aspirated to clear the transfer tubing before performing the air push. The volume should be less than the syringe volume. Default value is the recommended value for GX-27X ASPEC. Recommended value for ASPEC XL4 is 1100 uL.	4100 uL

Load and Collect - Properties Table *(Page 4 of 5)*

Load and Collect - Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Valve Air Push Time	The length of time the air is dispensed from the valve.	0.01 min
Valve Equilibration Time	Time the program waits after a valve air push before moving out of the well.	0.01 min

Load and Collect - Properties Table *(Page 5 of 5)*

Load and Collect - Advanced/Rinsing

Property Name	*Brief Description*	*Default Value*
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated. This selection changes the reference point for the Source Height to the liquid surface. Initial Volumes should be set in the Sample List when using this option.	
Liquid Level Detection	When selected, the probe will stop when the instrument detects the liquid surface. This selection changes the reference point for the Source Height to the height at which the liquid was detected. **Note:** If no liquid is detected, the probe will go to the bottom of the tubes. This option can only be used on instruments which support Liquid Level Detection.	
Sensitivity	Sensitivity is a percent (0 - 100%) used to detect liquid when Liquid Level Detection is used. A low setting is the most sensitive and higher settings are less sensitive.	1

Load and Collect - Advanced/Rinsing Table *(Page 1 of 3)*

Load and Collect - Advanced/Rinsing (Continued)

Property Name	*Brief Description*	*Default Value*
Source Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from a defined reference point (Tube Bottom unless Liquid Level Detection or Liquid Level Following is selected) when aspirating the Source Volume.	2 mm
Result Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Top when delivering to the DEC Zone.	-18 mm
Air Push Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Top when performing the air push.	-18 mm
Inside Rinse Zone	The zone to which the Inside Rinse Volume is delivered.	Inside Rinse
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
Inside Volume	The quantity of liquid used to rinse the inside of the probe.	250 uL
Inside Flow Rate	The speed at which the Inside Rinse Volume moves out of the probe and into the inside rinse position in the rinse station. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	10 mL/min
Outside Volume	The quantity of liquid used to rinse the outside of the probe.	500 uL
Outside Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	10 mL/min

Load and Collect - Advanced/Rinsing Table *(Page 2 of 3)*

Load and Collect - Advanced/Rinsing (Continued)

Property Name	*Brief Description*	*Default Value*
Inside Rinse Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Bottom for rinsing the probe at the inside rinse position in the rinse station.	0 mm
Outside Rinse Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Bottom for rinsing the probe at the inside rinse position in the rinse station.	0 mm

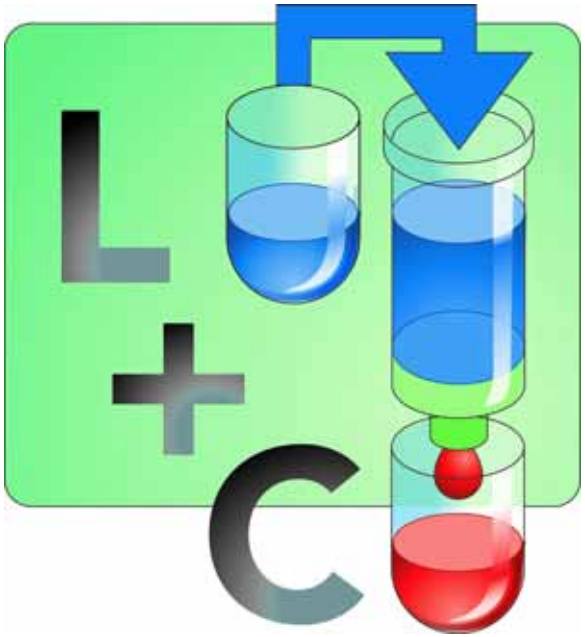
Load and Collect - Advanced/Rinsing Table *(Page 3 of 3)*

Load and Collect - Instruments

Property Name	*Brief Description*	*Default Value*
Liquid Handler	The liquid handler that the Task will affect.	
Pump	The pump or VPS that the Task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	

Load and Collect - Instruments

Load and Collect - Sequence of Steps



The following is an overview for the sequence of steps.

1 **Move Mobile Rack** on page D-91
2 **Aspirate** on page D-91
3 **Dispense** on page D-93
4 **Air Push** on page D-95
5 **Inside Rinse** on page D-97
6 **Outside Rinse** on page D-97
7 **Gas/Air Purge** on page D-97

MOVE MOBILE RACK

1 Move Z to top
2 Move mobile rack (DEC Zone) over the collect position

ASPIRATE

Reservoir

1 Move Z to top
2 Aspirate Source Volume (from Reservoir) at Source Flow Rate
3 Move probe to DEC Well in DEC Zone
4 Lower probe to Result Height from Tube Top
5 Dispense Source Volume (from Reservoir) at Result Flow Rate
6 Wait Equilibration Time
7 Move Z to top

- If Source Volume is greater than Syringe Volume, repeat steps 2-7 until Source Volume delivered

8 If SPE 215 = TRUE, perform Shake Off

   a) Move probe to edge of well

   b) Move probe to center of well

   c) Move Z to top

If SPE 215 = FALSE

   a) Move Z to top

Tray

1 Aspirate Source Air Gap at Air Gap Flow Rate

2 Move probe to Source Well in Source Zone

3 Lower probe into Source Well to Source Height

4 Aspirate Source Volume + Extra Volume at Source Flow Rate using Liquid Level Following if selected

5 Move Z to top

Transfer Port

1 Aspirate Source Air Gap at Air Gap Flow Rate

2 Move probe to Source Well in Source Zone

3 Lower probe to Source Height from Tube Bottom

4 Set Transfer Port to On

5 Aspirate Source Volume + Extra Volume at Source Flow Rate

6 Set Transfer Port to Off

7 Move Z to top

DISPENSE

Tray

1 Move probe to DEC Well in DEC Zone

2 Lower probe to Result Height from Tube Top

3 Dispense Source Volume at Result Flow Rate

4 Wait Equilibration Time

5 Move Z to top

- If Source Volume is greater than Syringe Volume, repeat Aspirate (Air Gap and Extra Volume are not aspirated) and Dispense until Source Volume delivered

6 If SPE 215 = TRUE, perform Shake Off

   a) Move probe to edge of well

   b) Move probe to center of well

   c) Move Z to top

If SPE 215 = FALSE

   a) Move Z to top

7 Move probe to well in Inside Rinse Zone

8 Lower probe to Inside Rinse Height from Tube Bottom

9 Dispense Extra Volume + Air Gap at Result Flow Rate

10 Move Z to top

Transfer Port

1 Move probe to DEC Well in DEC Zone

2 Lower probe to Result Height from Tube Top

3 Dispense Source Volume at Result Flow Rate

4 Wait Equilibration Time

5 Move Z to top

- If Source Volume is greater than Syringe Volume, repeat Aspirate (Air Gap and Extra Volume not aspirated) and Dispense until Source Volume delivered

6 If SPE 215 = TRUE, perform Shake Off

   a) Move probe to edge of well

   b) Move probe to center of well

   c) Move Z to top

If SPE 215 = FALSE

   a) Move Z to top

7 Move probe to well in Inside Rinse Zone

8 Lower probe to Inside Rinse Height from Tube Bottom

9 Dispense Extra Volume + Air Gap at Result Flow Rate

10 Move Z to top

AIR PUSH

Solenoid

1 Move probe to well in Inside Rinse Zone
2 Aspirate 250 uL at 5 mL/min
3 Set Voltage On and Output Contact 1 to Close (SPE 215) or
Set Output Contact 8 to Close (ASPEC XL/XLi)
4 Wait 0.05 min (SPE 215) or wait 0.01min (ASPEC XL/XLi)
5 Set Voltage Off and Output Contact 1 to Open (SPE 215) or set Output Contact 8 to Open (ASPEC XL/XLi)
6 Move Z to top
7 Move probe to DEC Wells in DEC Zone
8 Lower probe to Air Push Height from Tube Top
9 Set Voltage On and Output Contact 1 to Close (SPE 215) or
Set Output Contact 8 to Close (ASPEC XL/XLi)
10 Wait Air Push Time
11 Set Voltage Off and Output Contact 1 to Open (SPE 215) or set Output Contact 8 to Open (ASPEC XL/XLi)
12 Wait Equilibration Time
13 Move Z to top, performing shake off (SPE 215)
14 Move probe to well in Inside Rinse Zone
15 Dispense 250 uL at 5 mL/min

Syringe

1 Move probe to DEC Well in DEC Zone
2 Move Z to top

3 Aspirate Air Gap at Aspirate Flow Rate
4 Move probe to DEC Well in DEC Zone
5 Aspirate Air Push Volume at Aspirate Flow Rate
6 Lower probe to Air Push Height from Tube Top
7 Dispense Air Push Volume at Dispense Flow Rate
8 Wait Equilibration Time
9 Move Z to top, performing shake off (SPE 215)
10 Repeat steps 4–9 until Air Push Volume is dispensed
11 Move probe to Inside Rinse Wells at Inside Rinse Zone
12 Dispense Air Gap at Dispense Flow Rate

Valve

1 Move probe to well in Inside Rinse Zone
2 Aspirate Probe to Valve Volume at 10 mL/min
3 Switch valve to gas
4 Wait 0.05 min
5 Switch valve to probe
6 Move Z to top
7 Move probe to DEC Well in DEC Zone
8 Lower probe to Air Push Height from Tube Top
9 Switch valve to gas
10 Wait Air Push Time
11 Switch valve to probe

12 Wait Equilibration Time

13 Move Z to top, performing shake off (SPE 215)

14 Move probe to well in Inside Rinse Zone

15 Dispense Probe to Valve Volume at 10 mL/min

INSIDE RINSE

1 Move probe to well in Inside Rinse Zone

2 Lower probe to Inside Rinse Height from Tube Bottom

3 Aspirate (from Reservoir) Inside Rinse Volume at Inside Rinse Flow Rate

4 Dispense Inside Rinse Volume at Inside Rinse Flow Rate

5 Move Z to top

OUTSIDE RINSE

1 Move probe to well in Outside Rinse Zone

2 Lower probe into wells at Outside Rinse Height from Tube Bottom

3 Aspirate (from Reservoir) Outside Rinse Volume at Outside Rinse Flow Rate

4 Dispense Outside Rinse Volume at Outside Rinse Flow Rate

5 Move Z top

GAS/AIR PURGE

If SPE 215 = TRUE

1 Move Z to top

2 Set Voltage On and Output Contact 1 to Close

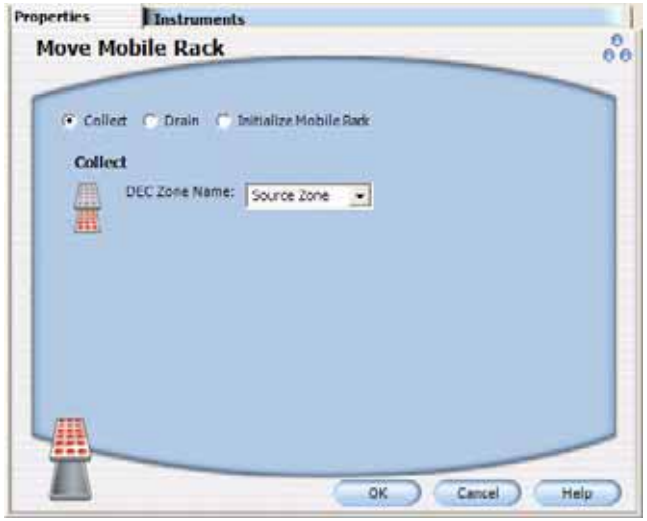
3 Wait 0.02 min

4 Set Voltage Off and Output Contact 1 to Open

5 Move Z to top

Move Mobile Rack

This task initializes the mobile rack or moves over the drain or the collect.



For more information about the properties on each tab, see:

Move Mobile Rack - Properties on page D-99

Move Mobile Rack - Instruments on page D-100

Move Mobile Rack - Sequence of Steps on page D-100

Move Mobile Rack - Properties

Property Name	*Brief Description*	*Default Value*
Collect/Drain/ Initialize Mobile Rack	Select where to move mobile rack. (Collect, Drain, or Initialize Mobile Rack.)	Collect
DEC Zone Name	The zone name.	

Move Mobile Rack - Properties

Move Mobile Rack - Instruments

Property Name	*Brief Description*	*Default Value*
Liquid Handler	The liquid handler that the Task will affect.	

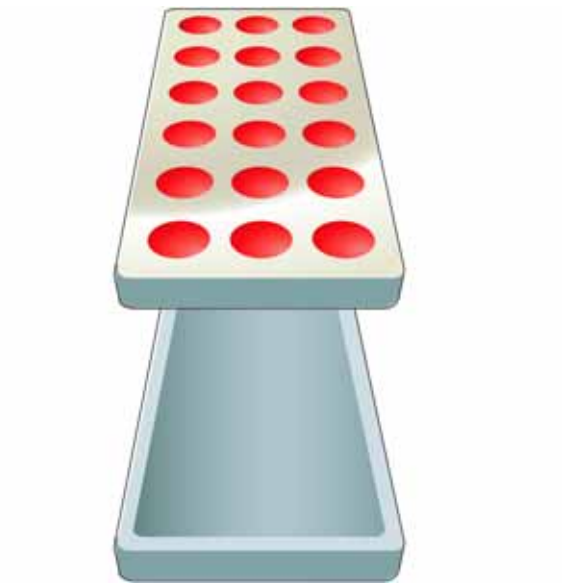
Move Mobile Rack - Instruments

Move Mobile Rack - Sequence of Steps

1 Move Z to top

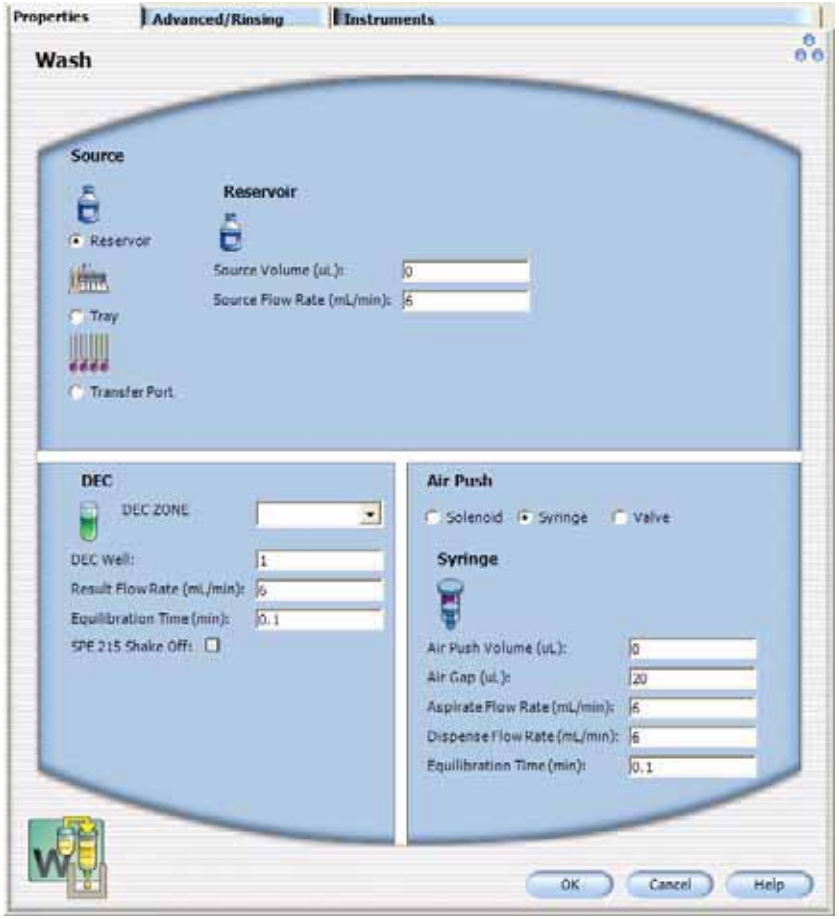
2 Move mobile rack (Collect Zone) over drain or the collect

3 Move Z to top



Wash

This task washes the DEC by aspirating a specified volume of liquid (source) from the reservoir, tray, or transfer ports and then dispensing the volume to the wells of the DEC zone with the mobile rack positioned over the drain.



For more information about the properties on each tab, see:

Wash - Properties on page D-102

Wash - Advanced/Rinsing on page D-106

Wash - Instruments on page D-108

Wash - Sequence of Steps on page D-109

Wash - Properties

Property Name	*Brief Description*	*Default Value*
Source	Select Reservoir, Tray, or Transfer Port.	Reservoir
Reservoir Source Volume	The quantity of a sample.	0 uL
Reservoir Source Flow Rate	The speed at which the Source Volume moves into and out of the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	6 mL/min
Tray Source Zone	The zone from which the Source Volume is drawn.	
Tray Source Well	The well in the Source Zone from which the Source Volume is drawn. When using a multiple probe instrument, type #x where x is a value defined in the Sample List.	1
Tray Source Volume	The quantity of a sample.	0 uL
Tray Extra Volume	An additional volume to the Source Volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/reservoir solvent and the Source Volume.	0 uL
Tray Source Air Gap	The quantity of the air gap aspirated before the Source Volume.	50 uL

Wash - Properties Table *(Page 1 of 5)*

Wash - Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Tray Source Flow Rate	The speed at which the Source Volume and Extra Volume move into and out of the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	6 mL/min
Tray Air Gap Flow Rate	The speed at which the Source Air Gap moves into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	1 mL/min
Transfer Port Source Zone	The zone from which the Source Volume is drawn.	
Transfer Port Transfer Port	Select the Transfer Port to activate for the task.	A
Transfer Port Source Volume	The quantity of a sample.	0 uL
Transfer Port Extra Volume	An additional volume to the Source Volume aspirated. It ensures that the actual volume of liquid to be transferred is not contaminated, and acts as an extra buffer between the air gap/reservoir solvent and the Source Volume.	0 uL
Transfer Port Source Air Gap	The speed at which the Source Volume and Extra Volume move into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	50 uL
Transfer Port Source Flow Rate	The speed at which the Source Volume and Extra Volume move into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	6 mL/min

Wash - Properties Table *(Page 2 of 5)*

Wash - Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Transfer Port Air Gap Flow Rate	The speed at which the Source Air Gap moves into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	1 mL/min
DEC Zone	The zone to which the Reservoir Volume is delivered.	
DEC Well	The well in the DEC Zone to which the Source Volume is delivered. When using a multiple probe instrument, type #x where x is a value defined in the Sample List.	1
Result Flow Rate	The speed at which the Source Volume moves out of the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	3 mL/min
Equilibration Time	Time the program waits after each dispense before moving out of the well.	0.1 min
SPE 215 Shake Off	The SPE 215 Shake Off unseals the seal foot from the mobile rack.	
Air Push	Select Solenoid, Syringe, or Valve. Solenoid option only valid for the SPE 215, ASPEC XL, and ASPEC XLi. Valve option only valid for the GX-271/274 ASPEC and ASPEC XL4.	Syringe
Solenoid Air Push Time	The length of time the air is dispensed from the solenoid or gas valve(s).	0.01 min

Wash - Properties Table *(Page 3 of 5)*

Wash - Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Solenoid Equilibration Time	Time the program waits after a solenoid air push before moving out of the well.	0.1 min
Syringe Air Push Volume	The quantity of air dispensed through the probe.	0 uL
Syringe Air Gap	The quantity of an air gap.	20 uL
Syringe Aspirate Flow Rate	The speed at which the Air Push Volume moves into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	6 mL/min
Syringe Dispense Flow Rate	The speed at which the Air Push Volume moves out of the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	6 mL/min
Syringe Equilibration Time	Time the program waits after a syringe air push before moving out of the well.	0.1 min
Valve Probe to Valve Volume	Transfer tubing volume between the probe and the valve. Volume of an air gap aspirated to clear the transfer tubing before performing the air push. The volume should be less than the syringe volume. Default value is the recommended value for GX-27X ASPEC. Recommended value for ASPEC XL4 is 1100 uL.	4100 uL

Wash - Properties Table *(Page 4 of 5)*

Wash - Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Valve Air Push Time	The length of time the air is dispensed from the valve.	0.01 min
Valve Equilibration Time	Time the program waits after a valve air push before moving out of the well.	0.1 min

Wash - Properties Table *(Page 5 of 5)*

Wash - Advanced/Rinsing

Property Name	*Brief Description*	*Default Value*
Liquid Level Following	When selected, the probe will follow the liquid down as it is aspirated. This selection changes the reference point for the Source Height to the liquid surface. Initial Volumes should be set in the Sample List when using this option.	
Liquid Level Detection	When selected, the probe will stop when the instrument detects the liquid surface. This selection changes the reference point for the Source Height to the height at which the liquid was detected. **Note:** If no liquid is detected, the probe will go to the bottom of the tubes. This option can only be used on instruments which support Liquid Level Detection.	
Sensitivity	Sensitivity is a percent (0 - 100%) used to detect liquid when Liquid Level Detection is used. A low setting is the most sensitive and higher settings are less sensitive.	1

Wash - Advanced/Rinsing Table *(Page 1 of 3)*

Wash - Advanced/Rinsing (Continued)

Property Name	*Brief Description*	*Default Value*
Source Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from a defined reference point (Tube Bottom unless Liquid Level Detection or Liquid Level Following is selected) when aspirating the Source Volume.	2 mm
Result Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Top when delivering to the DEC Zone.	-18 mm
Air Push Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Top when performing the air push.	-18 mm
Inside Rinse Zone	The zone to which the Inside Rinse Volume is delivered.	Inside Rinse
Outside Rinse Zone	The zone to which the Outside Rinse Volume is delivered.	Outside Rinse
Inside Volume	The quantity of liquid used to rinse the inside of the probe.	500 uL
Inside Flow Rate	The speed at which the Inside Rinse Volume moves out of the probe and into the inside rinse position in the rinse station. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	10 mL/min
Outside Volume	The quantity of liquid used to rinse the outside of the probe.	1000 uL
Outside Flow Rate	The speed at which the Outside Rinse Volume moves out of the probe and into the outside rinse position in the rinse station. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	10 mL/min

Wash - Advanced/Rinsing Table *(Page 2 of 3)*

Wash - Advanced/Rinsing (Continued)

Property Name	*Brief Description*	*Default Value*
Inside Rinse Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Bottom for rinsing the probe at the inside rinse position in the rinse station.	0 mL/min
Outside Rinse Height	The distance up (when a positive number is entered) or down (when a negative number is entered) from the Tube Bottom for rinsing the probe at the inside rinse position in the rinse station.	0 mL/min

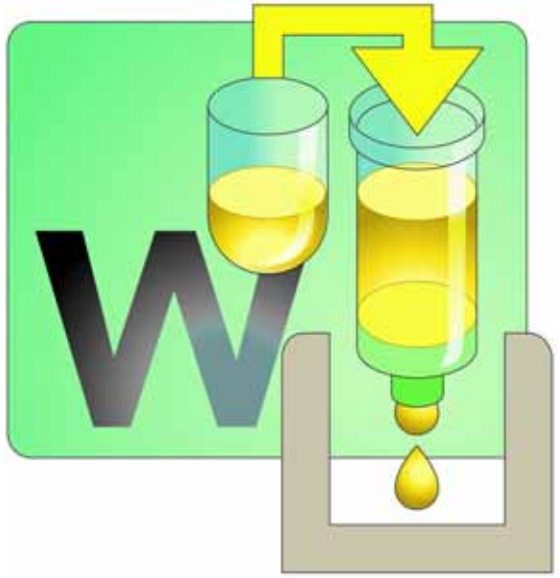
Wash - Advanced/Rinsing Table *(Page 3 of 3)*

Wash - Instruments

Property Name	*Brief Description*	*Default Value*
Liquid Handler	The liquid handler that the Task will affect.	
Pump	The pump or VPS that the Task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	

Wash - Instruments

Wash - Sequence of Steps



The following is an overview for the sequence of steps.

1 **Move Mobile Rack** on page D-109
2 **Aspirate** on page D-109
3 **Dispense** on page D-111
4 **Air Push** on page D-113
5 **Inside Rinse** on page D-115
6 **Outside Rinse** on page D-115
7 **Gas/Air Purge** on page D-115

MOVE MOBILE RACK

1 Move Z to top
2 Move mobile rack (DEC Zone) over drain

ASPIRATE

Reservoir

1 Move Z to top
2 Aspirate Source Volume (from Reservoir) at Source Flow Rate
3 Move probe to DEC Well in DEC Zone
4 Lower probe to Result Height from Tube Top
5 Dispense Source Volume (from Reservoir) at Result Flow Rate
6 Wait Equilibration Time
7 Move Z to top

- If Source Volume is greater than Syringe Volume, repeat steps 2-7 until Source Volume delivered

8 If SPE 215 = TRUE, perform Shake Off

   a) Move probe to edge of well

   b) Move probe to center of well

   c) Move Z to top

If SPE 215 = FALSE

   a) Move Z to top

Tray

1 Aspirate Source Air Gap at Air Gap Flow Rate

2 Move probe to Source Well in Source Zone

3 Lower probe into Source Well to Source Height

4 Aspirate Source Volume + Extra Volume at Source Flow Rate using Liquid Level Following if selected

5 Move Z to top

Transfer Port

1 Aspirate Source Air Gap at Air Gap Flow Rate

2 Move probe to Source Well in Source Zone

3 Lower probe to Source Height from Tube Bottom

4 Set Transfer Port to On

5 Aspirate Source Volume + Extra Volume at Source Flow Rate

6 Set Transfer Port to Off

7 Move Z to top

DISPENSE

Tray

1 Move probe to DEC Well in DEC Zone

2 Lower probe to Result Height from Tube Top

3 Dispense Source Volume at Result Flow Rate

4 Wait Equilibration Time

5 Move Z to top

- If Source Volume is greater than Syringe Volume, repeat Aspirate (Air Gap and Extra Volume are not aspirated) and Dispense until Source Volume delivered

6 If SPE 215 = TRUE, perform Shake Off

   a) Move probe to edge of well

   b) Move probe to center of well

   c) Move Z to top

If SPE 215 = FALSE

   a) Move Z to top

7 Move probe to well in Inside Rinse Zone

8 Lower probe to Inside Rinse Height from Tube Bottom

9 Dispense Extra Volume + Air Gap at Result Flow Rate

10 Move Z to top

Transfer Port

1 Move probe to DEC Well in DEC Zone

2 Lower probe to Result Height from Tube Top

3 Dispense Source Volume at Result Flow Rate

4 Wait Equilibration Time

5 Move Z to top

- If Source Volume is greater than Syringe Volume, repeat Aspirate (Air Gap and Extra Volume not aspirated) and Dispense until Source Volume delivered

6 If SPE 215 = TRUE, perform Shake Off

   a) Move probe to edge of well

   b) Move probe to center of well

   c) Move Z to top

If SPE 215 = FALSE

   a) Move Z to top

7 Move probe to well in Inside Rinse Zone

8 Lower probe to Inside Rinse Height from Tube Bottom

9 Dispense Extra Volume + Air Gap at Result Flow Rate

10 Move Z to top

AIR PUSH

Solenoid

1 Move probe to well in Inside Rinse Zone
2 Aspirate 250 uL at 5 mL/min
3 Set Voltage On and Output Contact 1 to Close (SPE 215) or
Set Output Contact 8 to Close (ASPEC XL/XLi)
4 Wait 0.05 min (SPE 215) or wait 0.01min (ASPEC XL/XLi)
5 Set Voltage Off and Output Contact 1 to Open (SPE 215) or set Output Contact 8 to Open (ASPEC XL/XLi)
6 Move Z to top
7 Move probe to DEC Wells in DEC Zone
8 Lower probe to Air Push Height from Tube Top
9 Set Voltage On and Output Contact 1 to Close (SPE 215) or
Set Output Contact 8 to Close (ASPEC XL/XLi)
10 Wait Air Push Time
11 Set Voltage Off and Output Contact 1 to Open (SPE 215) or set Output Contact 8 to Open (ASPEC XL/XLi)
12 Wait Equilibration Time
13 Move Z to top, performing shake off (SPE 215)
14 Move probe to well in Inside Rinse Zone
15 Dispense 250 uL at 5 mL/min

Syringe

1 Move probe to DEC Well in DEC Zone
2 Move Z to top

3 Aspirate Air Gap at Aspirate Flow Rate
4 Move probe to DEC Well in DEC Zone
5 Aspirate Air Push Volume at Aspirate Flow Rate
6 Lower probe to Air Push Height from Tube Top
7 Dispense Air Push Volume at Dispense Flow Rate
8 Wait Equilibration Time
9 Move Z to top, performing shake off (SPE 215)
10 Repeat steps 4–9 until Air Push Volume is dispensed
11 Move probe to Inside Rinse Wells at Inside Rinse Zone
12 Dispense Air Gap at Dispense Flow Rate

Valve

1 Move probe to well in Inside Rinse Zone
2 Aspirate Probe to Valve Volume at 10 mL/min
3 Switch valve to gas
4 Wait 0.05 min
5 Switch valve to probe
6 Move Z to top
7 Move probe to DEC Well in DEC Zone
8 Lower probe to Air Push Height from Tube Top
9 Switch valve to gas
10 Wait Air Push Time
11 Switch valve to probe

12 Wait Equilibration Time

13 Move Z to top, performing shake off (SPE 215)

14 Move probe to well in Inside Rinse Zone

15 Dispense Probe to Valve Volume at 10 mL/min

INSIDE RINSE

1 Move probe to well in Inside Rinse Zone

2 Lower probe to Inside Rinse Height from Tube Bottom

3 Aspirate (from Reservoir) Inside Rinse Volume at Inside Rinse Flow Rate

4 Dispense Inside Rinse Volume at Inside Rinse Flow Rate

5 Move Z to top

OUTSIDE RINSE

1 Move probe to well in Outside Rinse Zone

2 Lower probe into wells at Outside Rinse Height from Tube Bottom

3 Aspirate (from Reservoir) Outside Rinse Volume at Outside Rinse Flow Rate

4 Dispense Outside Rinse Volume at Outside Rinse Flow Rate

5 Move Z top

GAS/AIR PURGE

If SPE 215 = TRUE

1 Move Z to top

2 Set Voltage On and Output Contact 1 to Close

3 Wait 0.02 min

4 Set Voltage Off and Output Contact 1 to Open

5 Move Z to top

Tasks - Tweaks

E

Gilson supplies Tweaks tasks for use on the following instruments:

Task	Liquid Handler
Aspirate	All except GX-271/GX-281 Liquid Handler (with Solvent System) and Quad-Z 215 with Disposable Tips
Aspirate with Tips	Quad-Z 215 with Disposable Tips
Deliver	All except GX-271/GX-281 Liquid Handler (with Solvent System) and Quad-Z 215 with Disposable Tips
Deliver with Tips	Quad-Z 215 with Disposable Tips
Move To	All
Move To Zone	All
SS Aspirate	GX-271/GX-281 Liquid Handler (with Solvent System)
SS Deliver	GX-271/GX-281 Liquid Handler (with Solvent System)

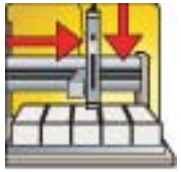
Tweaks

Tweaks Tasks

	Gilson Task Name and Description
	Aspirate This task aspirates liquid from the tray.
	Aspirate with Tips This task aspirates liquid from the tray.
	Deliver This task dispenses liquid through the probe.
	Deliver with Tips This task dispenses liquid through the probe.

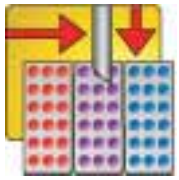
Tweaks Tasks Table *(Page 1 of 2)*

Tweaks Tasks



Move To

This task moves the probe to the top, home, specified XY Coordinates, or specified Z Coordinate.



Move To Zone

This Task moves the probe to a specified height (from bottom) in a specified well in a specified zone.

SS Aspirate

This Task aspirates liquid from the tray.

SS Deliver

This Task dispenses liquid through the probe.

Tweaks Tasks Table *(Page 2 of 2)*

Aspirate

This task aspirates liquid from the tray.

For more information about the properties on each tab, see:

Aspirate - Properties on page E-4

Aspirate - Instruments on page E-5

Aspirate - Sequence of Steps on page E-6

Aspirate - Properties

Property Name	*Brief Description*	*Default Value*
Source Volume	The quantity of a sample.	0 uL

Aspirate - Properties Table *(Page 1 of 2)*

Aspirate - Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Source Flow Rate	The speed at which the Source Volume moves into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	5 mL/min
Equilibration Time	Time the program waits after the aspirate.	0 min

Aspirate - Properties Table *(Page 2 of 2)*

Aspirate - Instruments

Property Name	*Brief Description*	*Default Value*
Liquid Handler	The liquid handler that the Task will affect.	
Pump	The pump or VPS that the Task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	

Aspirate - Instruments

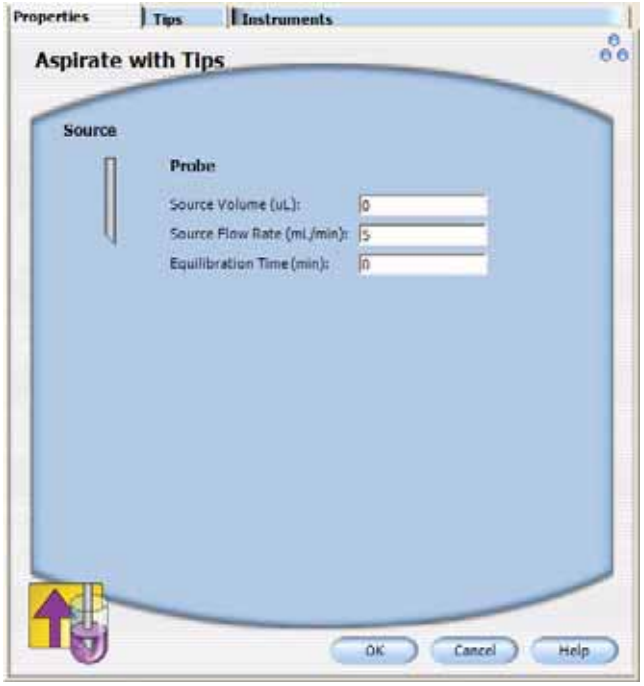
Aspirate - Sequence of Steps

1 Aspirate Source Volume at Source Flow Rate

2 Wait Equilibration Time

Aspirate with Tips

This task aspirates liquid from the tray.



For more information about the properties on each tab, see:

Aspirate with Tips - Properties on page E-7

Aspirate with Tips - Tips on page E-8

Aspirate with Tips - Instruments on page E-8

Aspirate with Tips - Sequence of Steps on page E-9

Aspirate with Tips - Properties

Property Name	*Brief Description*	*Default Value*
Source Volume	The quantity of a sample.	0 uL

Aspirate with Tips - Properties Table *(Page 1 of 2)*

Aspirate with Tips - Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Source Flow Rate	The speed at which the Source Volume moves into the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	5 mL/min
Equilibration Time	Time the program waits after the aspirate.	0 min

Aspirate with Tips - Properties Table *(Page 2 of 2)*

Aspirate with Tips - Tips

Property Name	*Brief Description*	*Default Value*
Prewet Tip	Select this option to wet the tip prior to aspirating the Source Volume.	
Prewet Volume	Volume aspirated and dispensed to prewet the tip when Prewet Tip has been selected.	10 uL

Aspirate with Tips - Tips

Aspirate with Tips - Instruments

Property Name	*Brief Description*	*Default Value*
Liquid Handler	The liquid handler that the Task will affect.	
Pump	The pump or VPS that the Task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	

Aspirate with Tips - Instruments

Aspirate with Tips - Sequence of Steps

1 If Wet Tip = TRUE
   a) Aspirate Prewet Volume at Source Flow Rate
   b) Dispense Prewet Volume at Source Flow Rate

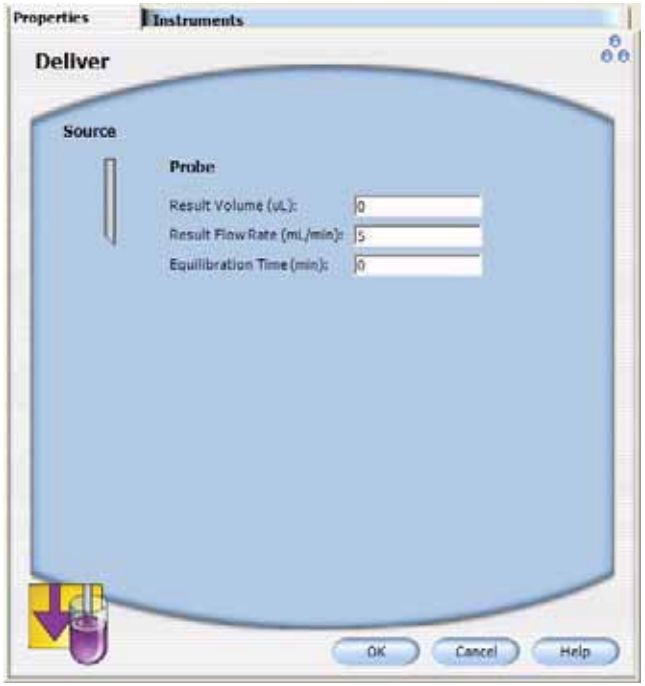
If Wet Tip=FALSE
   a) Skip to step 2

2 Aspirate Source Volume at Source Flow Rate

3 Wait Equilibration Time

Deliver

This task dispenses liquid through the probe.



For more information about the properties on each tab, see:

Deliver - Properties on page E-11

Deliver - Instruments on page E-11

Deliver - Sequence of Steps on page E-12

Deliver - Properties

Property Name	*Brief Description*	*Default Value*
Result Volume	The quantity of liquid delivered.	0 uL
Result Flow Rate	The speed at which the Result Volume moves out of the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	5 mL/min
Equilibration Time	Time the program waits after the dispense.	0 min

Deliver - Properties

Deliver - Instruments

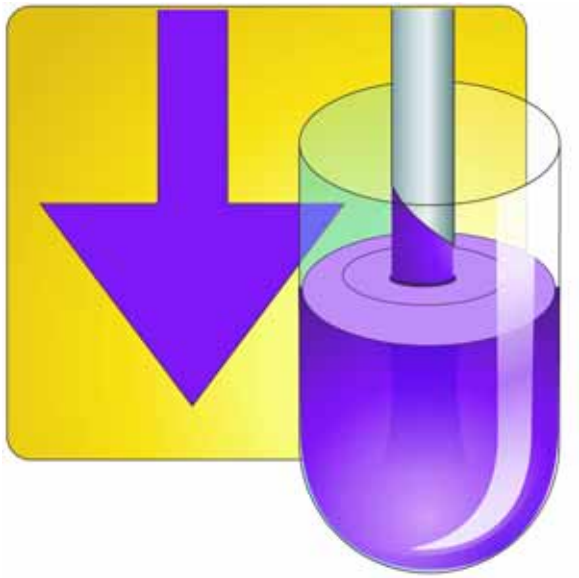
Property Name	*Brief Description*	*Default Value*
Liquid Handler	The liquid handler that the Task will affect.	
Pump	The pump or VPS that the Task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	

Deliver - Instruments

Deliver - Sequence of Steps

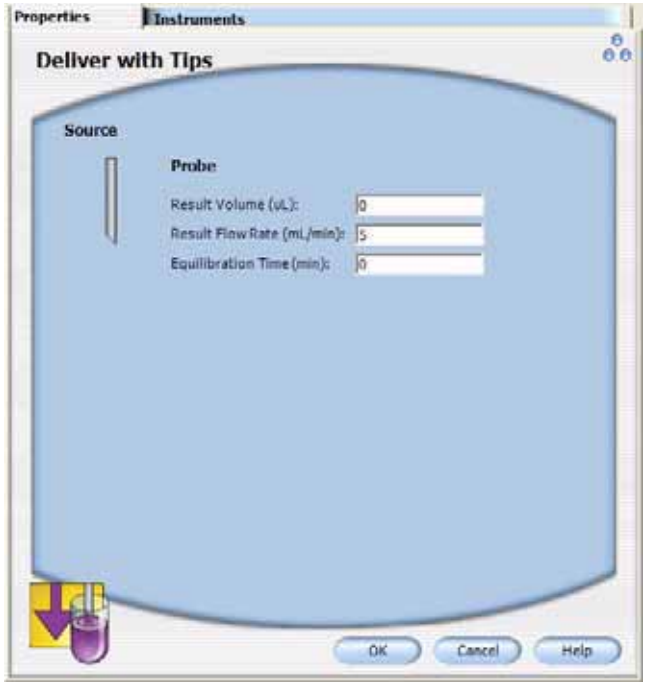
1 Dispense Result Volume at Result Flow Rate

2 Wait Equilibration Time



Deliver with Tips

This task dispenses liquid through the probe.



For more information about the properties on each tab, see:

Deliver with Tips - Properties on page E-13

Deliver with Tips - Instruments on page E-14

Deliver with Tips - Sequence of Steps on page E-15

Deliver with Tips - Properties

Property Name	*Brief Description*	*Default Value*
Result Volume	The quantity of liquid delivered.	0 uL

Deliver with Tips - Properties Table *(Page 1 of 2)*

Deliver with Tips - Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Result Flow Rate	The speed at which the Result Volume moves out of the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	5 mL/min
Equilibration Time	Time the program waits after the dispense.	0 min

Deliver with Tips - Properties Table *(Page 2 of 2)*

Deliver with Tips - Instruments

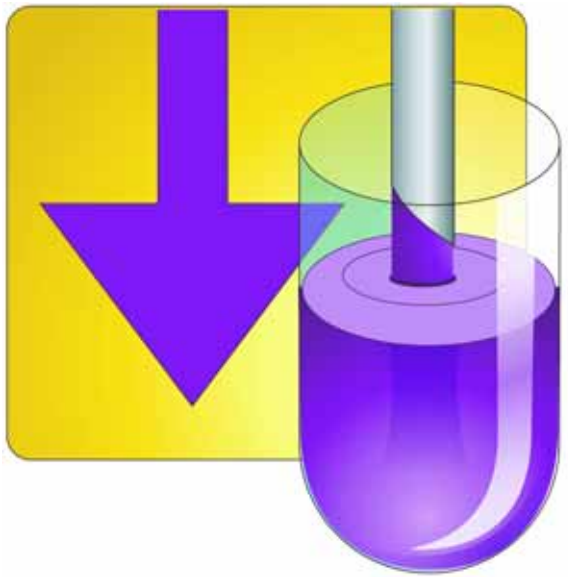
Property Name	*Brief Description*	*Default Value*
Liquid Handler	The liquid handler that the Task will affect.	
Pump	The pump or VPS that the Task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	

Deliver with Tips - Instruments

Deliver with Tips - Sequence of Steps

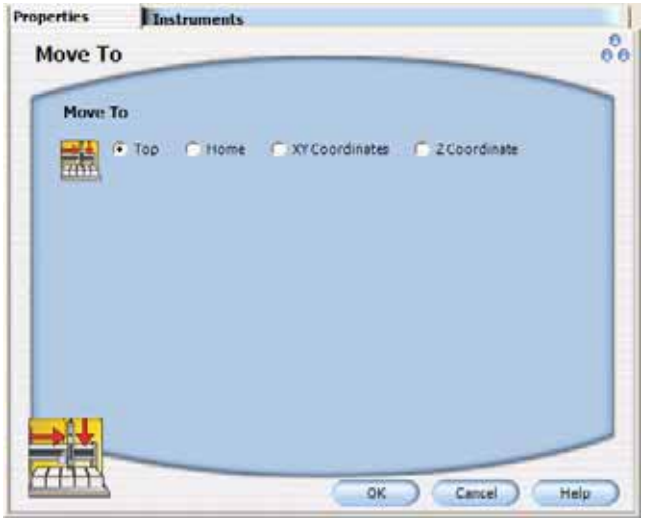
1 Dispense Result Volume at Result Flow Rate

2 Wait Equilibration Time



Move To

This task moves the probe to the top, home, specified XY Coordinates, or specified Z Coordinate.



For more information about the properties on each tab, see:

Move To - Properties on page E-16

Move To - Instruments on page E-17

Move To - Sequence of Steps on page E-18

Move To - Properties

Property Name	*Brief Description*	*Default Value*
Move To	Select one of the locations to move to: Top, Home, XY Coordinates or Z Coordinates	Top
XY Coordinate X Coordinate	X coordinate to move to.	0 mm

Move To - Properties Table *(Page 1 of 2)*

Move To - Properties (Continued)

Property Name	*Brief Description*	*Default Value*
XY Coordinate Y Coordinate	Y coordinate to move to.	0 mm
Z Coordinate Z Coordinate	Z coordinate to move to	0 mm

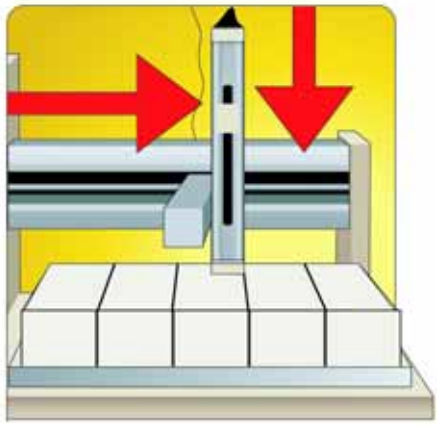
Move To - Properties Table *(Page 2 of 2)*

Move To - Instruments

Property Name	*Brief Description*	*Default Value*
Liquid Handler	The liquid handler that the Task will affect.	

Move To - Instruments

Move To - Sequence of Steps



If Top = TRUE

- Move Z to top

If Home = TRUE

- Move probe to Home

If XY Coordinates = TRUE

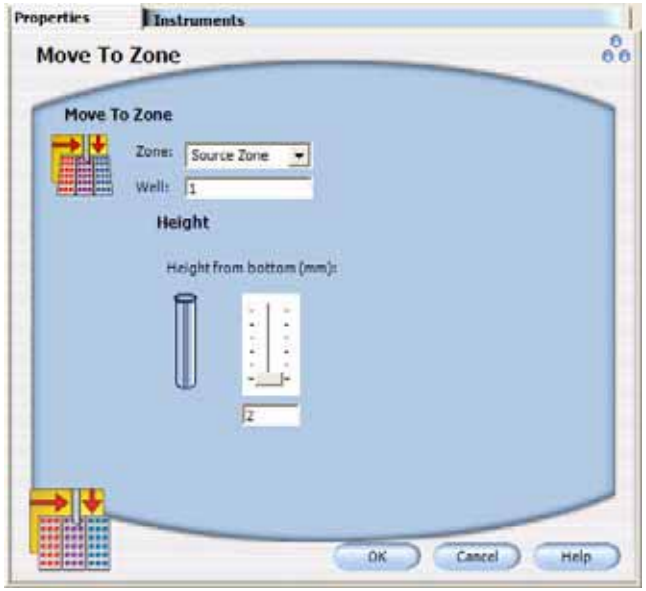
- Move probe to X Coordinate or Y Coordinate

If Z Coordinate = TRUE

- Move probe to Z Coordinate Option

Move To Zone

This Task moves the probe to a specified height (from bottom) in a specified well in a specified zone.



For more information about the properties on each tab, see:

Move To Zone - Properties on page E-19

Move To Zone - Instruments on page E-20

Move To Zone - Sequence of Steps on page E-20

Move To Zone - Properties

Property Name	*Brief Description*	*Default Value*
Zone	The zone to move to.	
Well	Enter the well number in the zone. When using a multiple probe instrument, type #x where x is a value defined in the Sample List.	1
Height	Enter the height in the zone.	2

Move To Zone - Properties

Move To Zone - Instruments

Property Name	*Brief Description*	*Default Value*
Liquid Handler	The liquid handler that the Task will affect.	

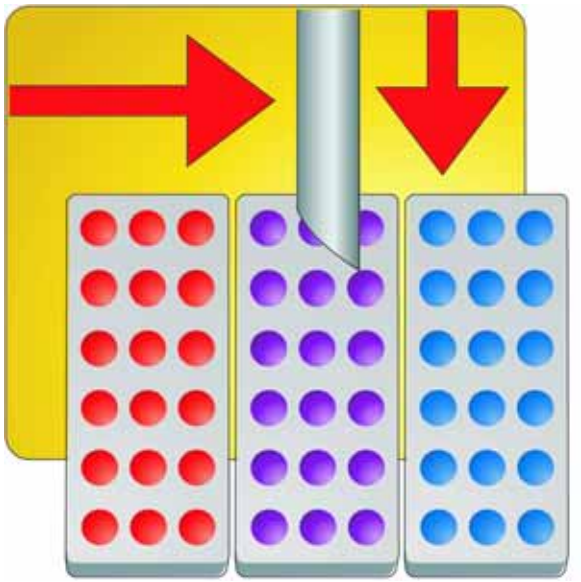
Move To Zone - Instruments

Move To Zone - Sequence of Steps

1 Move Z to top

2 Move probe to well in Zone

3 Lower probe into well to Height from Tube Bottom



SS Aspirate

This Task aspirates liquid from the tray.

For more information about the properties on each tab, see:

SS Aspirate - Properties on page E-22

SS Aspirate - Instruments on page E-22

SS Aspirate - Sequence of Steps on page E-23

SS Aspirate - Properties

Property Name	*Brief Description*	*Default Value*
Source Volume	The quantity of a sample.	0 uL
Source Flow Rate	The speed at which the Source Volume and Extra Source Volume move into the The speed at which the Source and Diluent Volumes move out of the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	5 mL/min
Equilibration Time	Time the program waits after the aspirate.	0 min

SS Aspirate - Properties

SS Aspirate - Instruments

Property Name	*Brief Description*	*Default Value*
Liquid Handler	The liquid handler that the Task will affect.	
Pump	The pump or VPS that the Task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	

SS Aspirate - Instruments

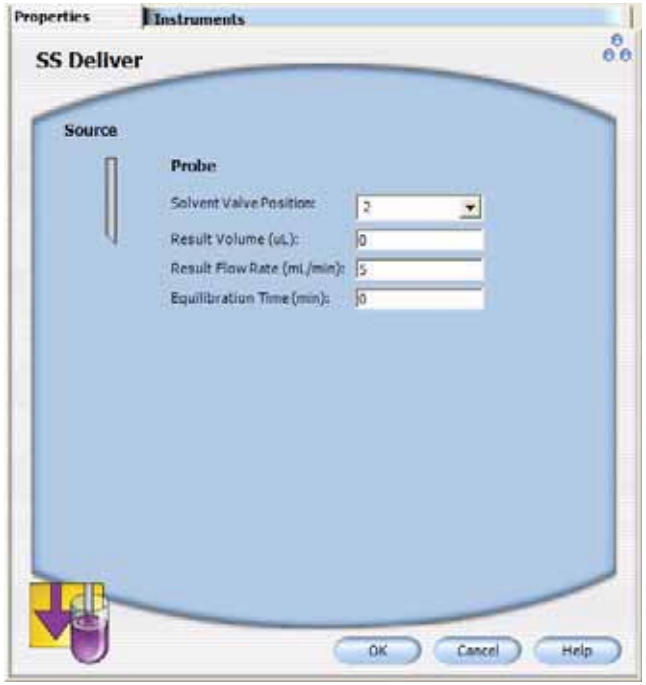
SS Aspirate - Sequence of Steps

1 Aspirate Source Volume at Source Flow Rate

2 Wait Equilibration Time

SS Deliver

This Task dispenses liquid through the probe.



For more information about the properties on each tab, see:

SS Deliver - Properties on page E-24

SS Deliver - Instruments on page E-25

SS Deliver - Sequence of Steps on page E-26

SS Deliver - Properties

Property Name	*Brief Description*	*Default Value*
Solvent Valve Position	Desired position (1 through 6) of the solvent valve on the GX Solvent System. The position designated for waste cannot be used.	2
Result Volume	The quantity of liquid delivered.	0 uL

SS Deliver - Properties Table *(Page 1 of 2)*

SS Deliver - Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Result Flow Rate	The speed at which the Result Volume moves out of the probe. For a range of suggested flow rate values, see **Flow Rates** on page 4-93.	5 mL/min
Equilibration Time	Time the program waits after the dispense.	0 min

SS Deliver - Properties Table *(Page 2 of 2)*

SS Deliver - Instruments

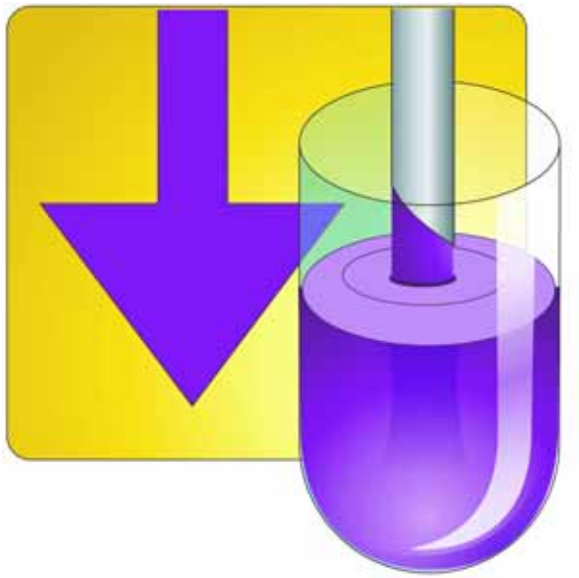
Property Name	*Brief Description*	*Default Value*
Liquid Handler	The liquid handler that the Task will affect.	
Pump	The pump or VPS that the Task will affect. If your liquid handler has an internal dilutor, select the liquid handler.	

SS Deliver - Instruments

SS Deliver - Sequence of Steps

1 Dispense Result Volume at Result Flow Rate. Solvent Valve at Solvent Valve Position selected

2 Wait Equilibration Time



Tasks - Auxiliary

F

Refer to the table on the next page for information about which instruments can use each Auxiliary task.

Task	Instrument	215 Liquid Handler	215 Liquid Handler without Pump	215 SW Liquid Handler	221 XL Liquid Handler	222 XL Liquid Handler	223 Sample Changer	402 Pump Dual	402 Pump Dual with Tee	402 Pump Single	406 Pump Dual	406 Pump Single	444 QuadDilutor	506C System Interface	606 GSIOC to RS-232 Converter	819 Injection Module	ASPEC XL	ASPEC XL4	ASPEC XLi	GX-271 ASPEC without Pump	GX-271 Liquid Handler	GX-271 Liquid Handler without Pump	GX-274 ASPEC without Pump	GX-274 Liquid Handler without Pump	GX-281 Liquid Handler	Minipuls 3	Multiple Probe 215	Quad-Z 215	SPE 215	VALVEMATE	VALVEMATE II
	Scan Bar Codes																								X						
	Set Electrical Contact	X	X	X	X	X	X							X			X	X	X	X	X	X	X	X	X		X	X	X		
	Set Valve Position																X	X	X	X	X	X	X	X						X	X

Auxiliary

Auxiliary Tasks

	Gilson Task Name and Description
	GSIOC This task sends a GSIOC command to the specified instrument or unit ID.
	Prompt This task displays a prompt dialog with the selected message.
	Run Executable This task invokes an external application.
	Scan Bar Codes This task scans the racks on the locator plate of the GX-281 Liquid Handler for the purpose of ensuring that the rack hardware setup matches the software rack (Bed Layout) setup.

Auxiliary Tasks Table *(Page 1 of 2)*

Auxiliary Tasks (Continued)

Set Electrical Contact

This task opens and powers off, closes and powers on, or pulses the specified output contact on the specified instrument.

Set Valve Position

This task opens and powers off, closes and powers on, or pulses the specified contact (solenoid) on the specified instrument or changes the valve position on the VALVEMATE.

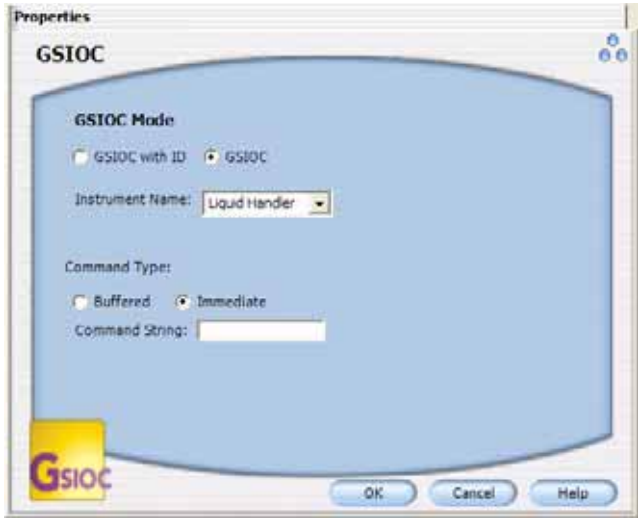
Wait

This Task waits a specified length of time or initiates a wait in the Method until a contact state change is detected on the specified input contact.

Auxiliary Tasks Table *(Page 2 of 2)*

GSIOC

This task sends a GSIOC command to the specified instrument or unit ID.



For more information about the properties on each tab, see:

GSIOC - Properties on page F-6

GSIOC - Sequence of Steps on page F-7

GSIOC - Properties

Property Name	*Brief Description*	*Default Value*
GSIOC Mode	The GSIOC Modes: GSIOC with ID or GSIOC. GSIOC with ID command sends a GSIOC command to an instrument at a specified unit ID. GSIOC sends a GSIOC command to a specific instrument.	GSIOC
GSIOC with ID Unit ID	The unit ID of the instrument that the command will affect.	1
GSIOC Instrument Name	The instrument that the command will affect.	
Command Type	Select Buffered or Immediate command type.	Immediate
Command String	The string that sends an instruction to the Instrument.	

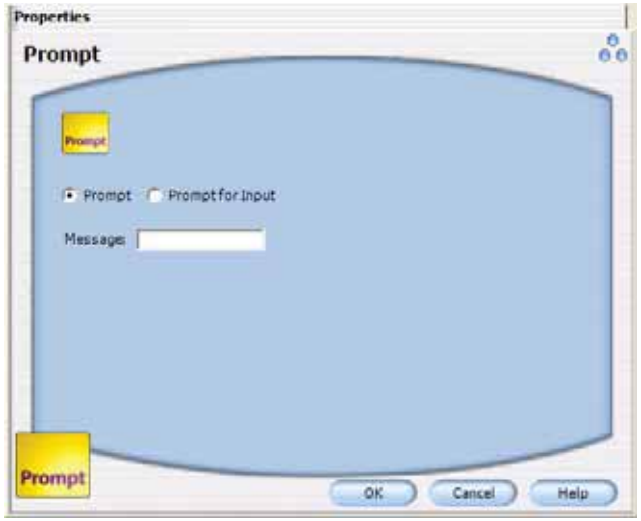
GSIOC - Properties

GSIOC - Sequence of Steps

1 Send Command of Command Type (Immediate or Buffered) to the Instrument

Prompt

This task displays a prompt dialog with the selected message.



For more information about the properties on each tab, see:

Prompt - Properties on page F-8

Prompt - Sequence of Steps on page F-9

Prompt - Properties

Property Name	*Description*	*Default Value*
Prompt/Prompt for Input	Prompt displays message. Prompt for Input displays message and allows user to input a valve.	Prompt
Message	Enter the text to display in the message box.	

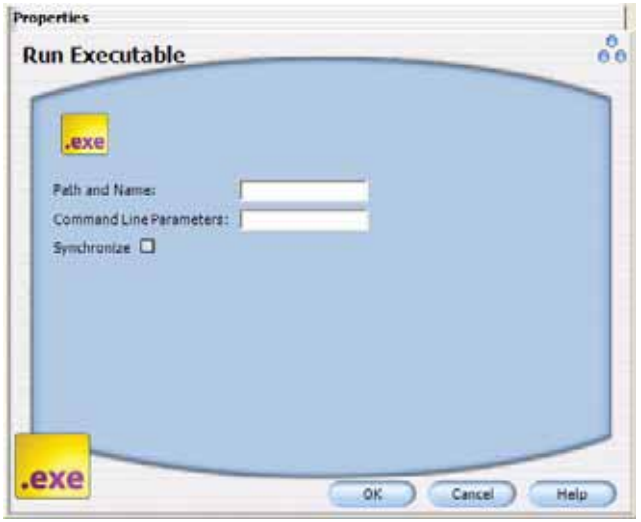
Prompt - Properties

Prompt - Sequence of Steps

1 Display dialog box with Message text

Run Executable

This task invokes an external application.



For more information about the properties on each tab, see:

Run Executable - Properties on page F-10

Run Executable - Sequence of Steps on page F-11

Run Executable - Properties

Property Name	*Brief Description*	*Default Value*
Path and Name	File path of the executable to run.	
Command Line Parameters	Optional: The information sent to the program located at the Path and Name.	
Synchronize	Synchronize selected (True) waits for the external program to close before continuing task execution. Synchronize unselected (False) launches the external program and then immediately resumes task execution.	False

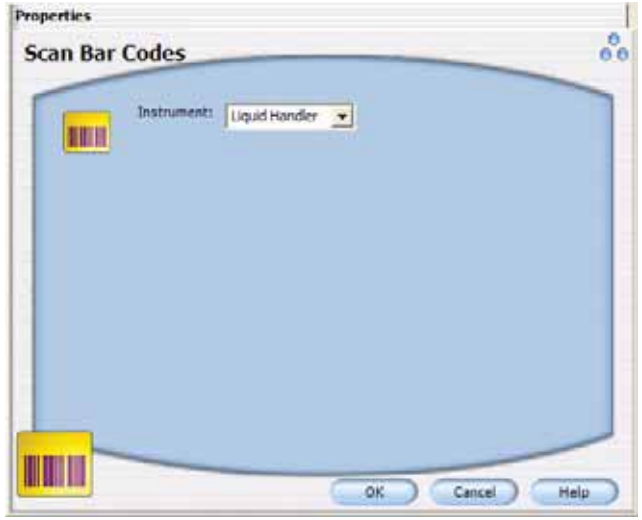
Run Executable - Properties

Run Executable - Sequence of Steps

1 Launch external program, sending Command Line Parameters if entered

Scan Bar Codes

This task scans the racks on the locator plate of the GX-281 Liquid Handler for the purpose of ensuring that the rack hardware setup matches the software rack (Bed Layout) setup.



For more information about the properties on each tab, see:

Scan Bar Codes - Properties on page F-12

Scan Bar Codes - Sequence of Steps on page F-13

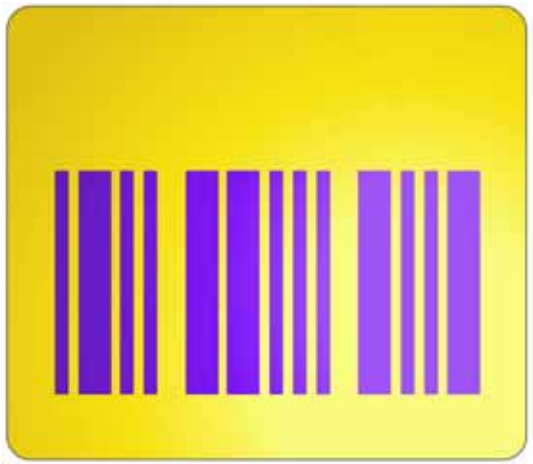
Scan Bar Codes - Properties

Property Name	*Brief Description*	*Default Value*
Instrument	The instrument that the command will affect.	

Scan Bar Codes - Properties

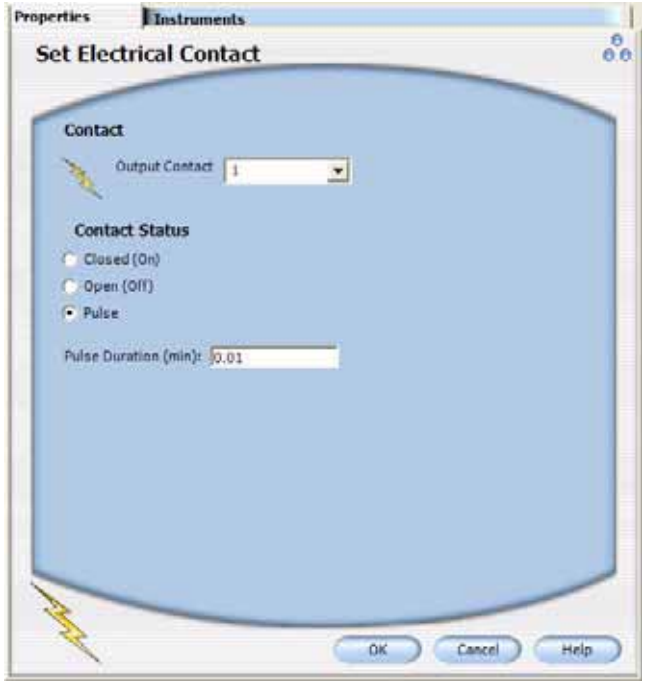
Scan Bar Codes - Sequence of Steps

1 Scan bar codes of all racks defined in the bed layout



Set Electrical Contact

This task opens and powers off, closes and powers on, or pulses the specified output contact on the specified instrument.



For more information about the properties on each tab, see:

Set Electrical Contact - Properties on page F-15

Set Electrical Contact - Instruments on page F-15

Set Electrical Contact - Sequence of Steps on page F-16

Set Electrical Contact - Properties

Property Name	*Brief Description*	*Default Value*
Output Contact	This command sets the specified contact output for the specified instrument.	1
Contact Status Closed (On)	Closes and powers on the specified output contact.	
Contact Status Open (Off)	Opens and powers off the specified output contact.	
Contact Status Pulse	Pulses the specified output contact.	Default
Pulse Pulse Duration	The time the program will wait between output state toggle. Displays when Pulse is selected for Contact Status.	0.01 min

Set Electrical Contact - Properties

Set Electrical Contact - Instruments

Property Name	*Brief Description*	*Default Value*
Instrument	The instrument type that the command will affect.	

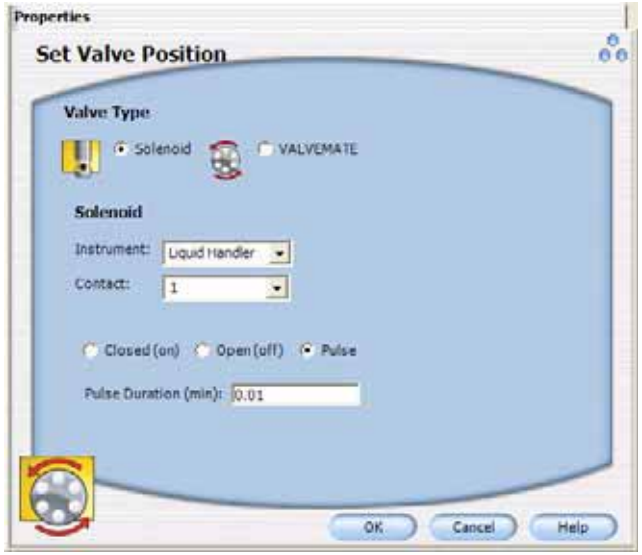
Set Electrical Contact - Instruments

Set Electrical Contact - Sequence of Steps

1 Close, Open, or Pulse the specified contact

Set Valve Position

This task opens and powers off, closes and powers on, or pulses the specified contact (solenoid) on the specified instrument or changes the valve position on the VALVEMATE.



For more information about the properties on each tab, see:

Set Valve Position - Properties on page F-17

Set Valve Position - Sequence of Steps on page F-19

Set Valve Position - Properties

Property Name	*Brief Description*	*Default Value*
Valve Type	Select Solenoid or VALVEMATE.	Solenoid
Solenoid Instrument	The instrument type that the command will affect.	

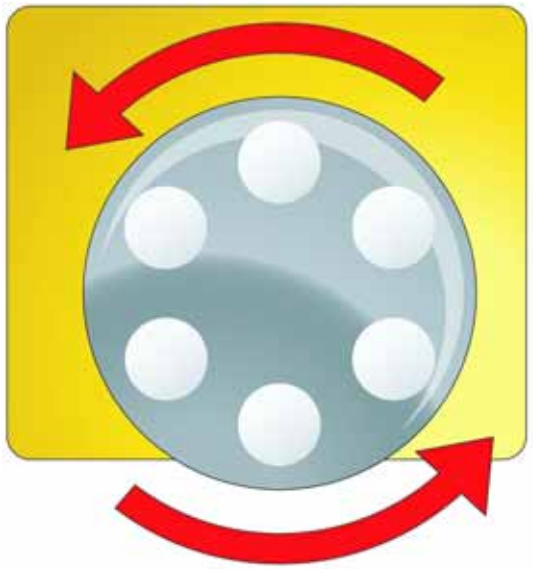
Set Valve Position - Properties Table *(Page 1 of 2)*

Set Valve Position - Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Solenoid Contact	The output contact on the instrument that controls the Solenoid Valve. Contact range 1-10.	1
Solenoid Closed (On)	Closes and powers on the specified output contact.	
Solenoid Open (Off)	Opens and powers off the specified output contact.	
Solenoid Pulse	Pulses the specified output contact.	Default
Solenoid Pulse Duration	The time the program will wait between output state toggle. Displays when Pulse is selected for Contact Status.	0.01 min
VALVEMATE Instrument Name	The VALVEMATE on which to set the valve position.	
VALVEMATE Valve Position	Valve position.	1

Set Valve Position - Properties Table *(Page 2 of 2)*

Set Valve Position - Sequence of Steps



Solenoid

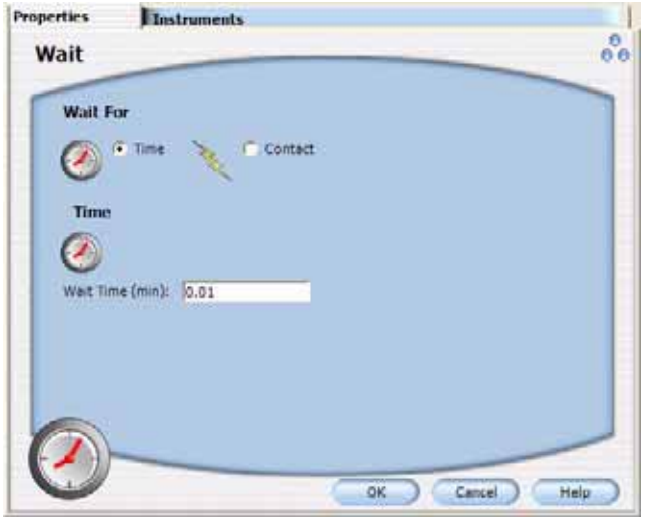
1 Close, Open, or Pulse the specified contact

VALVEMATE

1 Switch valve to specified position

Wait

This Task waits a specified length of time or initiates a wait in the Method until a contact state change is detected on the specified input contact.



For more information about the properties on each tab, see:

Wait - Properties on page F-20

Wait - Instruments on page F-21

Wait - Sequence of Steps on page F-22

Wait - Properties

Property Name	*Brief Description*	*Default Value*
Wait For	Select Time or Contact.	Time

Wait - Properties Table *(Page 1 of 2)*

Wait - Properties (Continued)

Property Name	*Brief Description*	*Default Value*
Time Wait Time	Time the program waits before starting the next task.	0.01 min
Contact Contact Name	The input contact being monitored for a state change. Valid range is A-E.	A

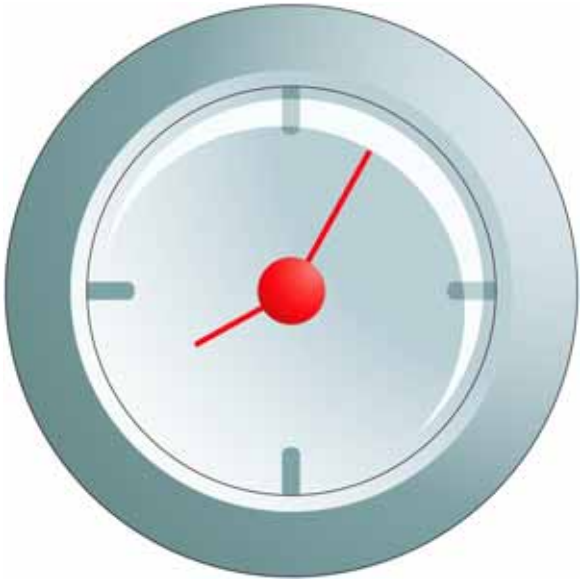
Wait - Properties Table *(Page 2 of 2)*

Wait - Instruments

Property Name	*Brief Description*	*Default Value*
Instrument	The instrument type that the command will affect.	

Wait - Instruments

Wait - Sequence of Steps



Time

1 Wait for Wait Time to elapse

Contact

1 Wait for specified input contact to change state

Rinse Locations

G

Rinse locations are assigned to zones in the Bed Layout Builder. Inside and outside rinse zones are then chosen in the Task. This appendix describes the recommended rinse positions for the:

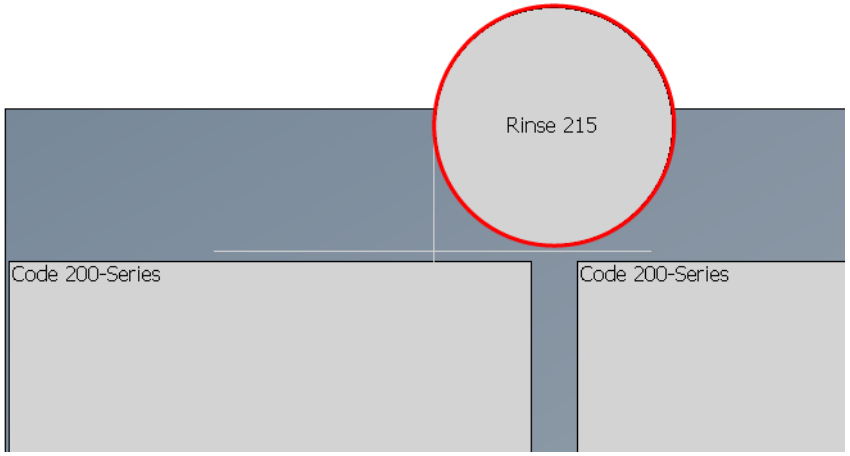
- **215 Family** on page G-2
- **221 XL Liquid Handler** on page G-6
- **222 XL Liquid Handler and ASPEC XL** on page G-9
- **223 Sample Changer** on page G-16
- **ASPEC XL4** on page G-14
- **GX-271 Liquid Handler and GX-271 ASPEC** on page G-21
- **GX-274 Liquid Handler and GX-274 ASPEC** on page G-24
- **GX-281 Liquid Handler** on page G-28

215 Family

Bed Layout Trays (Templates)

215 SW
215 for Code 517 Rack
215 for Five Code 200-Series Racks
215 for Seven XL Racks
Multiple Probe 215
Quad-Z 215
Quad-Z 215 with Tips
SPE 215

Rinse 215 (Footprint)



Rinse 215

Drain 215 Body

Rinse 215 Insert (for single probe 215)

Rinse 215 Deep Short Insert

Rinse 215 Deep Tall Insert

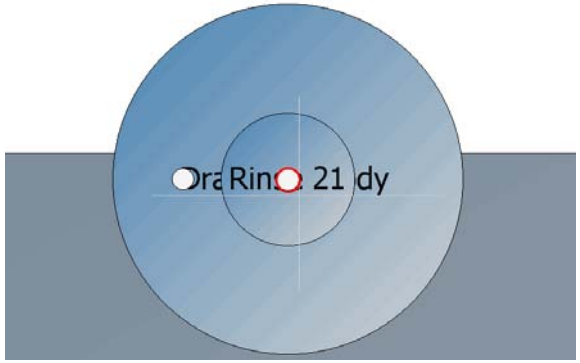
Rinse 215 Flow-Through Short Insert

Rinse 215 Flow-Through Tall Insert

Rinse 215 Shallow Short Insert

Rinse 215 Shallow Tall Insert

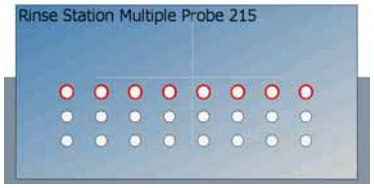
Inside Rinse Location (Left Well)



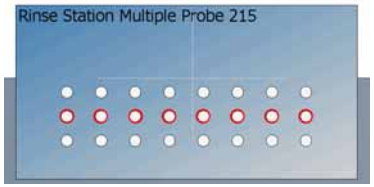
Outside or Flow-Through Rinse Location (Center Well)

Rinse Locations

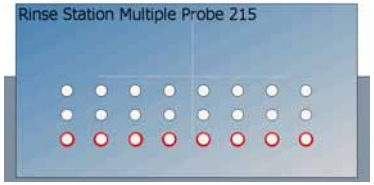
Rinse Station Multiple Probe 215



Flow-Through Rinse Locations (Top Wells)

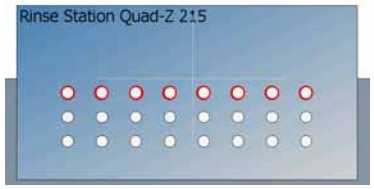


Inside Rinse Locations (Center Trough—designated as wells)

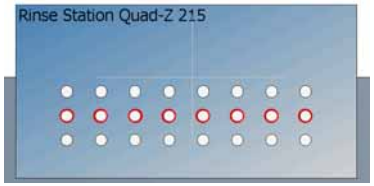


Outside Rinse Locations (Bottom Wells)

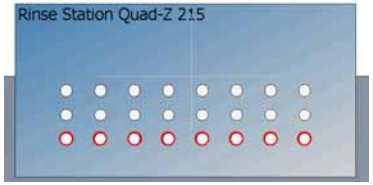
Rinse Station Quad-Z 215



Flow-Through Rinse Locations (Top Wells)

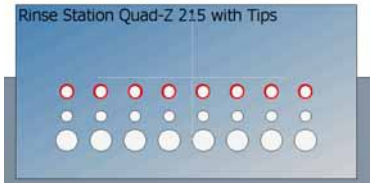


Inside Rinse Locations (Center Trough—designated as wells)

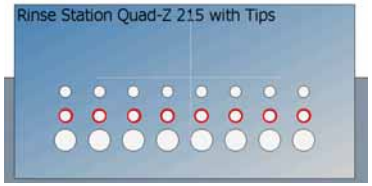


Outside Rinse Locations (Bottom Wells)

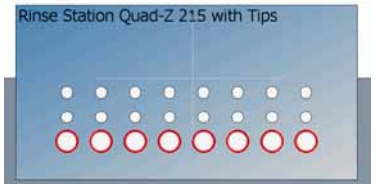
Rinse Station Quad-Z 215 with Tips



Flow-Through Rinse Locations (Top Wells)

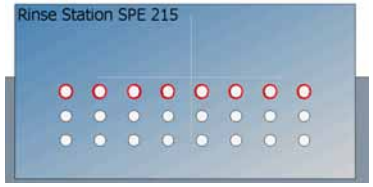


Inside Rinse Locations (Center Trough—designated as wells)

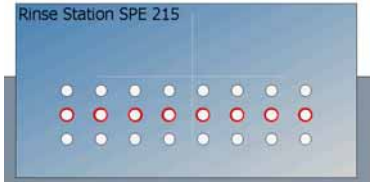


Outside Rinse Locations (Bottom Wells)

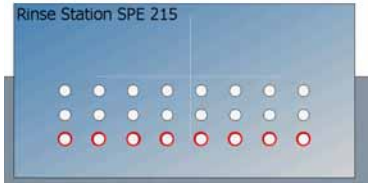
Rinse Station SPE 215



Flow-Through Rinse Locations (Top Wells)



Inside Rinse Locations (Center Trough—designated as wells)



Outside Rinse Locations (Bottom Wells)

221 XL Liquid Handler

Bed Layout Trays (Templates)

Small XL

Small XL Microplate

Small XL Plastic Tray

Port Bar Small XL (Footprint)

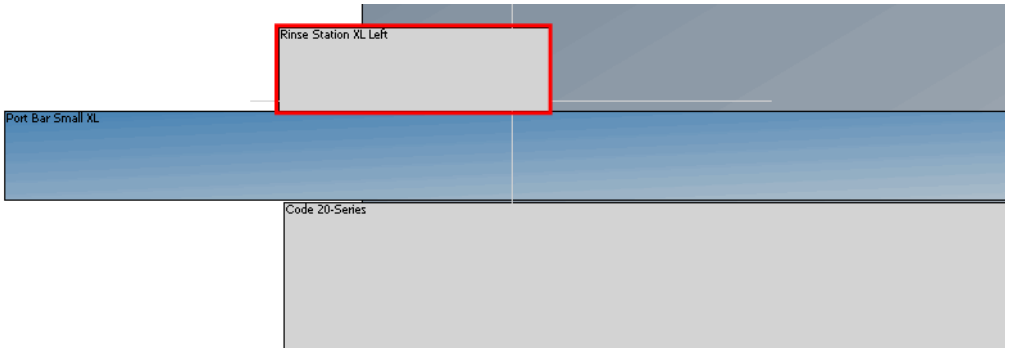
Port Bar Small XL

Port Bar Small XL Antlers Code 0-Series

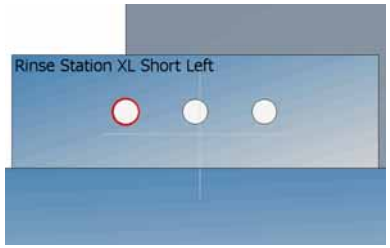
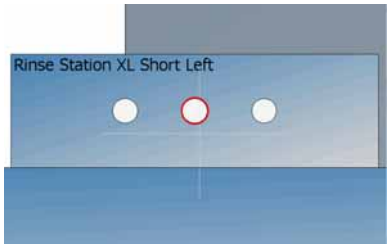
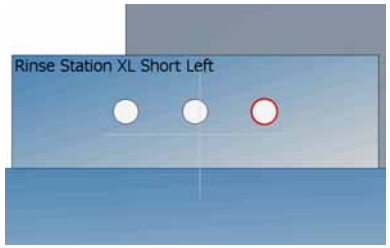
Port Bar Small XL Antlers Code 30-Series

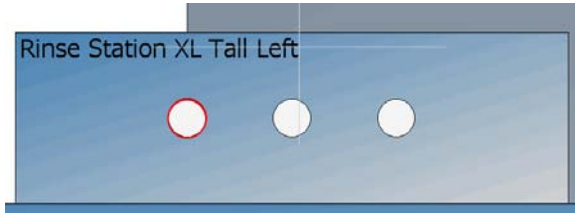
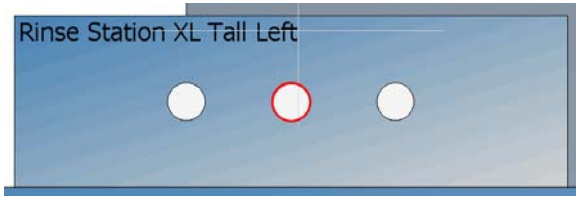
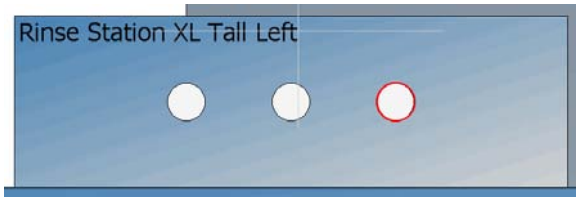
Port Bar Small XL Transfer Ports

Rinse Station XL Left (Footprint)



Rinse Station XL Left

	Rinse Station XL Short Left (Rack)		
		TRILUTION Label	
 **Inside Rinse Location (Left Well)**	Inside Rinse (Left Well)	Drain XL	0 mm rinse depth
 **Outside Shallow Rinse Location (Center Well)**	Outside Shallow Rinse (Center Well)	Rinse XL (Shallow)	10 mm rinse depth
 **Outside Deep Rinse Location (Right Well)**	Outside Deep Rinse (Right Well)	Rinse XL (Flow)	45 mm wash cylinder

	Rinse Station XL Tall Left (Rack)		
		TRILUTION Label	
 **Inside Rinse Location (Left Well)**	Inside Rinse (Left Well)	Drain XL	0 mm rinse depth
 **Outside Shallow Rinse Location (Center Well)**	Outside Shallow Rinse (Center Well)	Rinse XL (Shallow)	10 mm rinse depth
 **Outside Deep Rinse Location (Right Well)**	Outside Deep Rinse (Right Well)	Rinse XL (Deep)	85 mm wash cylinder

222 XL Liquid Handler and ASPEC XL

Bed Layout Trays (Templates)

ASPEC XL

Large XL Small Bar

Large XL Code 30-Series

Large XL Code 20- and 60- Series Heightener Kit

Large XL Code 20- and 60-Series

Port Bar Large XL (Footprint)

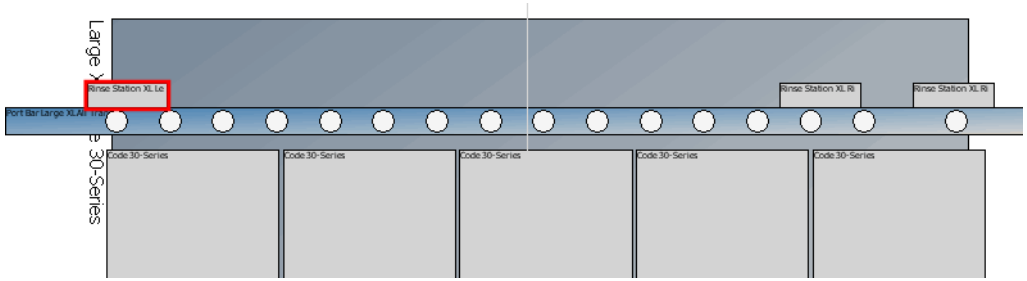
Port Bar Large XL 2 Injection Ports (Rack)

Port Bar Large XL 2 Injection Ports Only (Rack)

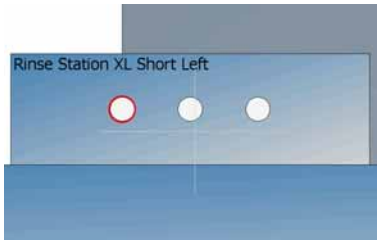
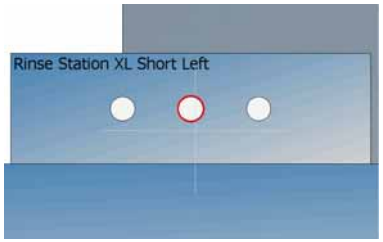
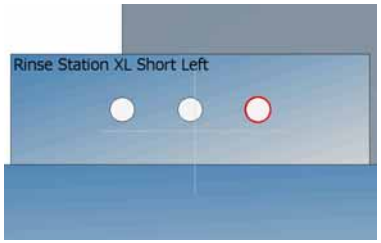
Port Large All Transfer (Rack)

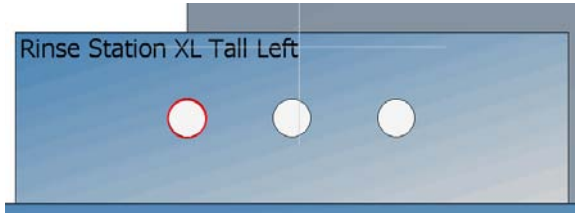
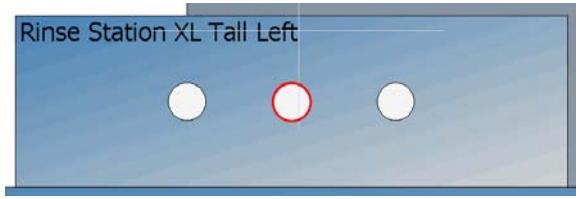
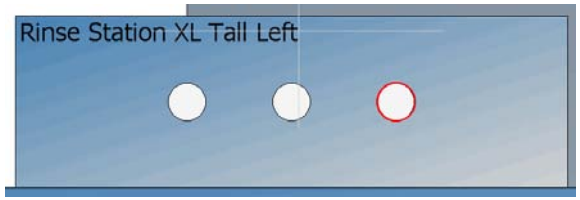
Port Bar Large XL Antler Code 0-Series (Rack)

Rinse Station XL Left (Footprint)

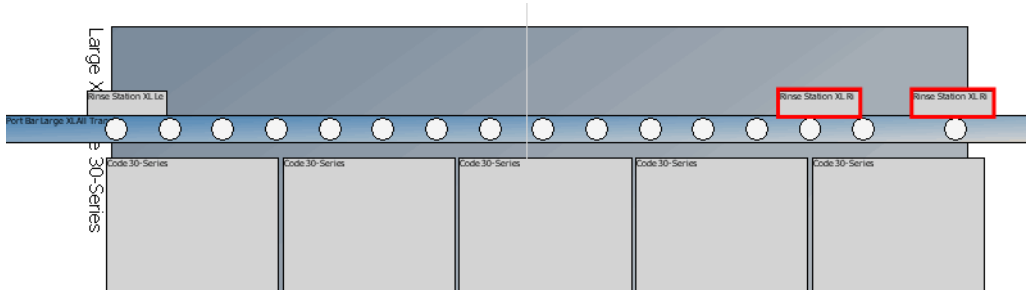


Rinse Station XL Left

	Rinse Station XL Short Left (Rack)		
		TRILUTION Label	
 **Inside Rinse Location (Left Well)**	Inside Rinse (Left Well)	Drain XL	0 mm rinse depth
 **Outside Shallow Rinse Location (Center Well)**	Outside Shallow Rinse (Center Well)	Rinse XL (Shallow)	10 mm rinse depth
 **Outside Deep Rinse Location (Right Well)**	Outside Deep Rinse (Right Well)	Rinse XL (Flow)	45 mm wash cylinder

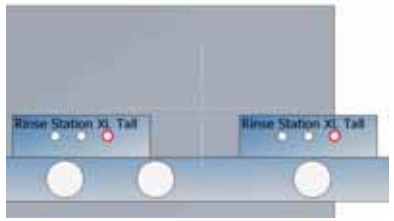
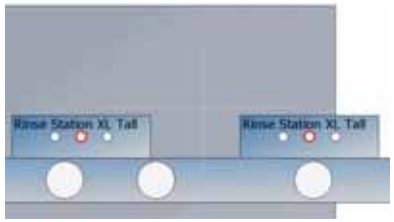
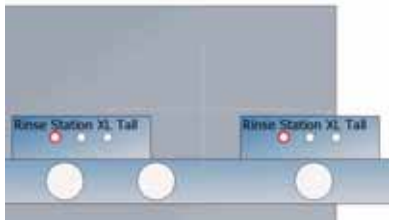
	Rinse Station XL Tall Left (Rack)		
		TRILUTION Label	
 **Inside Rinse Location (Left Well)**	Inside Rinse (Left Well)	Drain XL	0 mm rinse depth
 **Outside Shallow Rinse Location (Center Well)**	Outside Shallow Rinse (Center Well)	Rinse XL (Shallow)	10 mm rinse depth
 **Outside Deep Rinse Location (Right Well)**	Outside Deep Rinse (Right Well)	Rinse XL (Deep)	85 mm wash cylinder

Rinse Station XL Right (Footprint)



Rinse Station XL Right

	Rinse Station XL Short Right (Rack)		
		TRILUTION Label	
Inside Rinse Locations (Right Wells)	Inside Rinse (Right Wells)	Drain XL	0 mm rinse depth
Outside Shallow Rinse Locations (Center Wells)	Outside Shallow Rinse (Center Well)	Rinse XL (Shallow)	10 mm rinse depth
Outside Deep Rinse Locations (Left Wells)	Outside Deep Rinse (Left Wells)	Rinse XL (Flow)	45 mm wash cylinder

	Rinse Station XL Tall Right (Rack)		
		TRILUTION Label	
 **Inside Rinse Locations (Right Wells)**	Inside Rinse (Right Wells)	Drain XL	0 mm rinse depth
 **Outside Shallow Rinse Locations (Center Wells)**	Outside Shallow Rinse (Center Wells)	Rinse XL (Shallow)	10 mm rinse depth
 **Outside Deep Rinse Locations (Left Wells)**	Outside Deep Rinse (Left Wells)	Rinse XL (Deep)	85 mm wash cylinder

ASPEC XL4

Bed Layout Trays (Templates)

ASPEC XL4 Narrow Racks

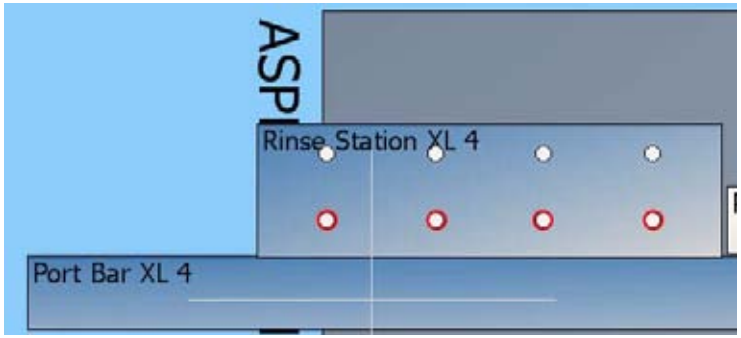
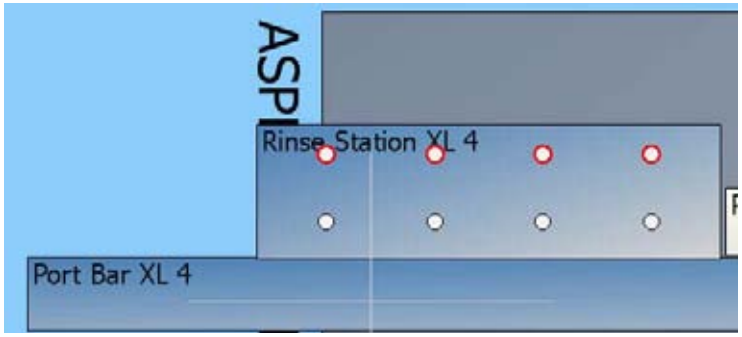
ASPEC XL4 Wide Racks

Port Bar ASPEC XL4 (Footprint)

Port Bar XL 4 (Rack)

Rinse Station XL 4 (Footprint)

Rinse Station XL 4

	Rinse Station XL 4 (Rack)		
		TRILUTION Label	
 **Inside Rinse Location (Front Wells)**	Inside Rinse (Front Wells)	Drain XL	0 mm rinse depth
 **Outside Deep Rinse Location (Rear Wells)**	Outside Deep Rinse (Rear Wells)	Rinse XL (Deep)	10 mm rinse depth

223 Sample Changer

Bed Layout Trays (Templates)

223 for Antlers + Code 20-Series High

223 for Antlers + Code 20-Series Low

Port Bar Large 223 (Footprint)

Port Bar 223 Antlers Code 0-Series (Rack)

Port Bar 223 Antlers Code 30-Series (Rack)

Bed Layout Trays (Templates)

223 for Four Code 20-Series High

223 for Four Code 20-Series Low

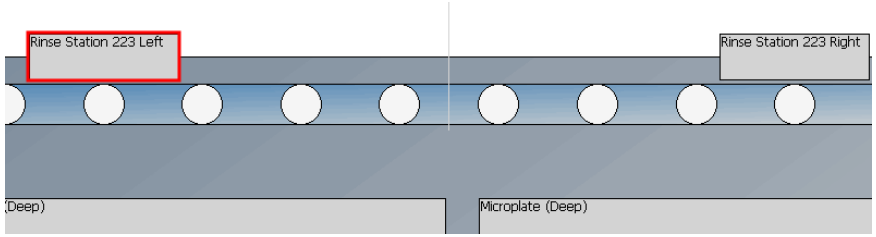
223 for Four Deep Microplates

223 for Four Shallow Microplates

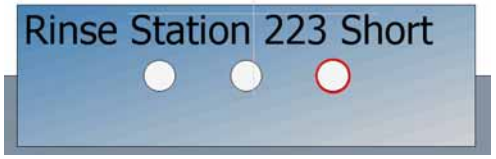
Port Bar 223 (Footprint)

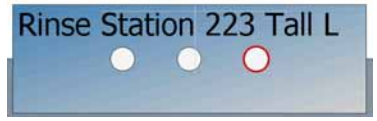
Port Bar 223 (Rack)

Rinse Station 223 Left (Footprint)

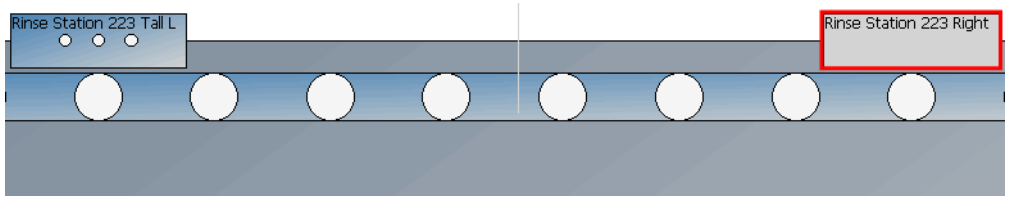


Rinse Station 223 Left

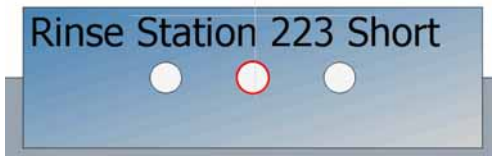
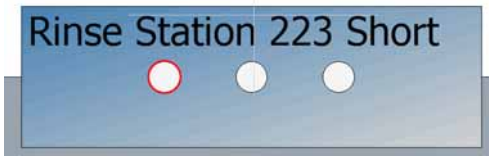
	Rinse Station XL Short Left (Rack)		
		TRILUTION Label	
Inside Rinse Location (Left Well)	Inside Rinse (Left Well)	Drain XL	0 mm rinse depth
Outside Shallow Rinse Location (Center Well)	Outside Shallow Rinse (Center Well)	Rinse XL (Shallow)	10 mm rinse depth
 **Outside Deep Rinse Location (Right Well)**	Outside Deep Rinse (Right Well)	Rinse XL (Flow)	45 mm wash cylinder

	Rinse Station 223 Tall Left (Rack)		
		TRILUTION Label	
Inside Rinse Location (Left Well)	Inside Rinse (Left Well)	Drain XL	0 mm rinse depth
Outside Shallow Rinse Location (Center Well)	Outside Shallow Rinse (Center Well)	Rinse XL (Shallow)	10 mm rinse depth
 **Outside Deep Rinse Location (Right Well)**	Outside Deep Rinse (Right Well)	Rinse XL (Deep)	85 mm wash cylinder

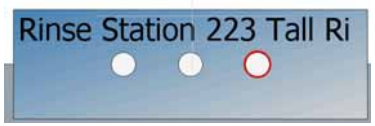
Rinse Station 223 Right (Footprint)



Rinse Station 223 Right

Rinse Station 223 Short Right (Rack)			
		TRILUTION Label	
Inside Rinse Locations (Right Well)	Inside Rinse (Right Well)	Drain XL	0 mm rinse depth
 **Outside Shallow Rinse Locations (Center Well)**	Outside Shallow Rinse (Center Well)	Rinse XL (Shallow)	10 mm rinse depth
 **Outside Deep Rinse Locations (Left Well)**	Outside Deep Rinse (Left Wells)	Rinse XL (Flow)	45 mm wash cylinder

Rinse Locations

	Rinse Station 223 Tall Right (Rack)		
		TRILUTION Label	
 **Inside Rinse Locations (Right Well)**	Inside Rinse (Right Wells)	Drain XL	0 mm rinse depth
Outside Shallow Rinse Locations (Center Well)	Outside Shallow Rinse (Center Wells)	Rinse XL (Shallow)	10 mm rinse depth
Outside Deep Rinse Locations (Left Well)	Outside Deep Rinse (Left Wells)	Rinse XL (Deep)	85 mm wash cylinder

GX-271 Liquid Handler and GX-271 ASPEC

Bed Layout Tray (Template)

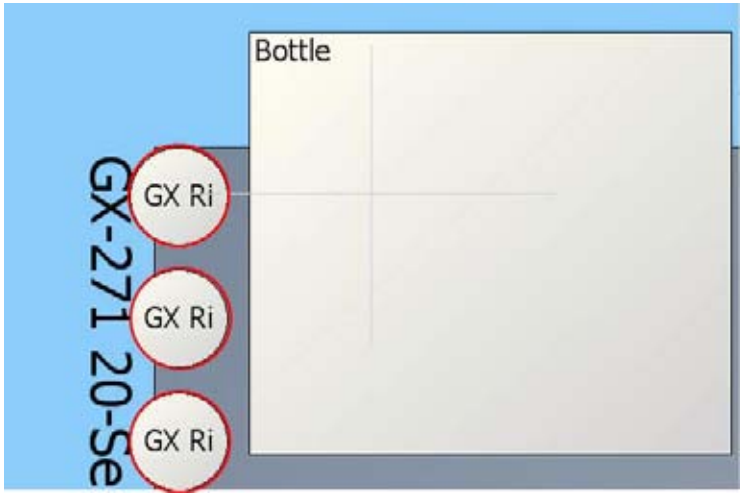
GX-271 20-Series Racks

GX-271 20-Series Racks with Direct Inject

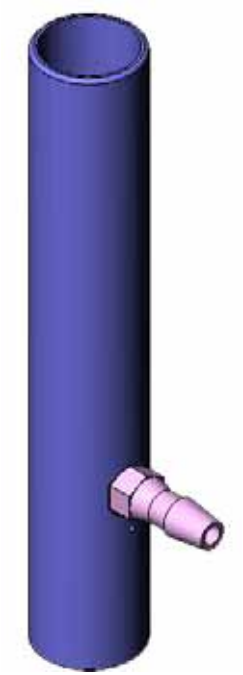
GX-271 200-Series Racks

GX-271 200-Series Racks with Direct Inject

GX Rinse Station (Footprint)



GX Rinse Stations



Drain/Rinse Station for Inside Rinse of Probe

Drain/Rinse Station GX Extra Tall (Rack)

Use	Tube Top (mm) Tube Bottom (mm)	Rinse Station Part Number
Inside Rinse	197.5 33	26034556

Drain/Rinse Station GX Tall (Rack)

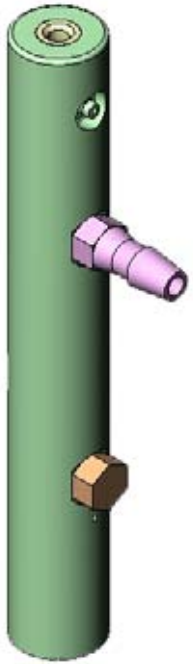
Use	Tube Top (mm) Tube Bottom (mm)	Rinse Station Part Number
Inside Rinse	162.4 33	26034555

Drain/Rinse Station GX Short (Rack)

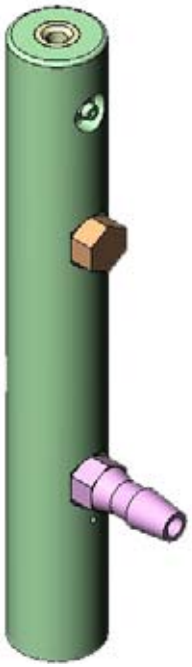
Use	Tube Top (mm) Tube Bottom (mm)	Rinse Station Part Number
Inside Rinse	114.21 33	26034554

Drain/Rinse Station GX Short (56 mm Probe)(Rack)

Use	Tube Top (mm) Tube Bottom (mm)	Rinse Station Part Number
Inside Rinse	114.21 67	26034554



Rinse Station for Outside Rinse of Probe (Static)



Rinse Station for Outside Rinse of Probe (Flowing)

Rinse Station GX Extra Tall (Rack)

Use	Tube Top (mm) Tube Bottom (mm)	Rinse Station Part Number
Outside Rinse (static or flowing)	197.5 33	26034553

Rinse Station GX Tall (Rack)

Use	Tube Top (mm) Tube Bottom (mm)	Rinse Station Part Number
Outside Rinse (static or flowing)	162.4 33	26034551

Rinse Station GX Short (Rack)

Use	Tube Top (mm) Tube Bottom (mm)	Rinse Station Part Number
Outside Rinse (static or flowing)	114.21 33	26034552

Rinse Station GX Short (56 mm Probe)(Rack)

Use	Tube Top (mm) Tube Bottom (mm)	Rinse Station Part Number
Outside Rinse (static or flowing)	114.21 67	26034552

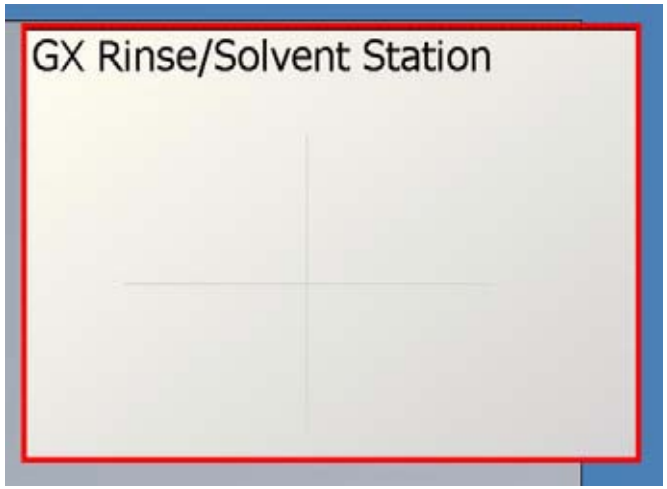
GX-274 Liquid Handler and GX-274 ASPEC

Bed Layout Tray (Template)

GX-274 20-Series Racks

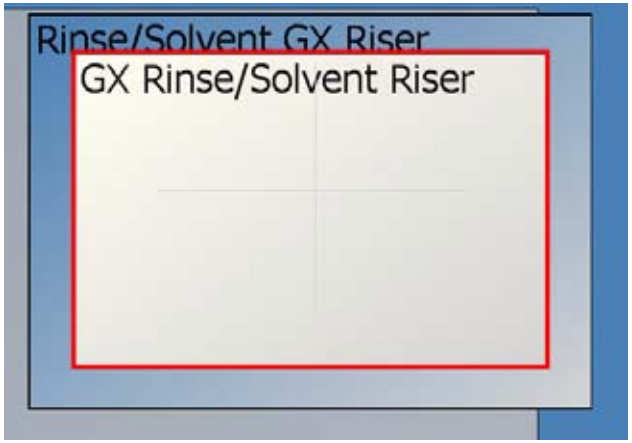
GX-274 200-Series Racks

GX Rinse/Solvent Station (Footprint)



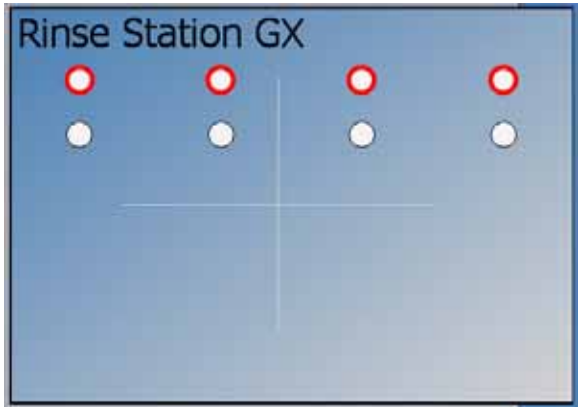
GX Rinse/Solvent Station

GX Rinse/Solvent Riser (Rack)

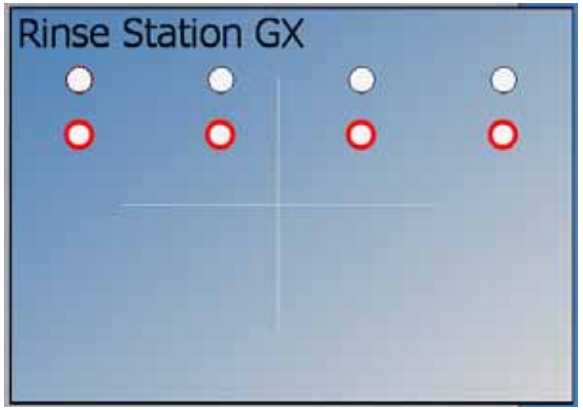


GX Rinse/Solvent Riser

Rinse Station GX (Rack)



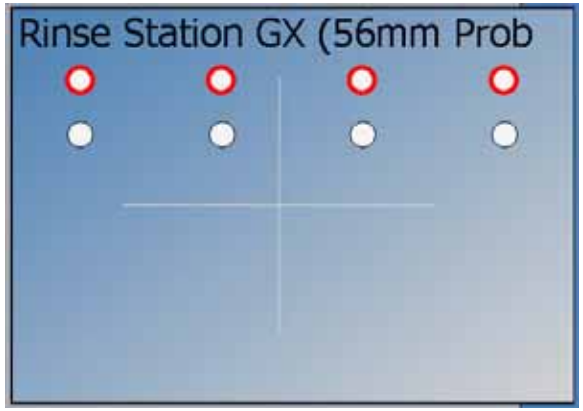
Flow-Through Rinse Locations (Top Wells)



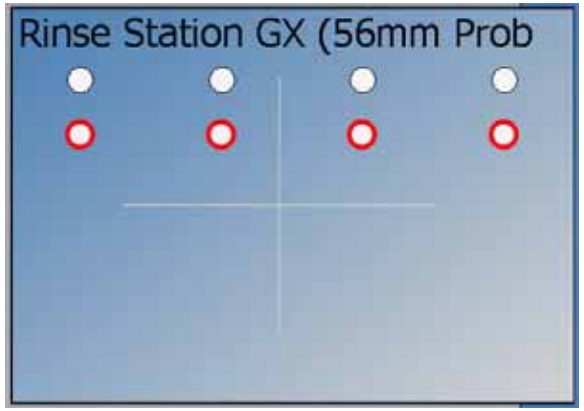
Inside Rinse Locations (Bottom Wells)

Rinse Locations

Rinse Station GX (56mm Probes)

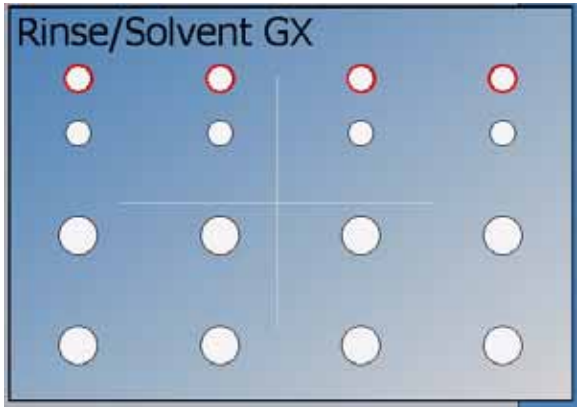


Flow-Through Rinse Locations (Top Wells)

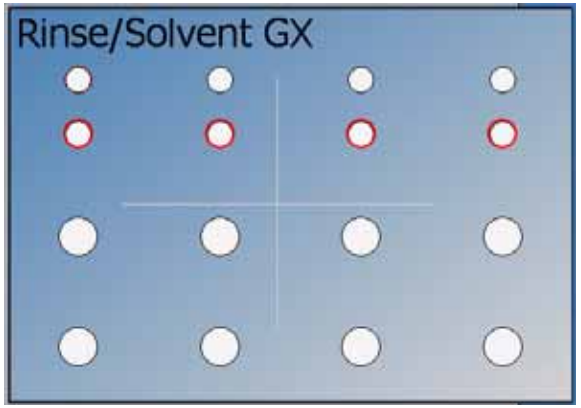


Inside Rinse Locations (Bottom Wells)

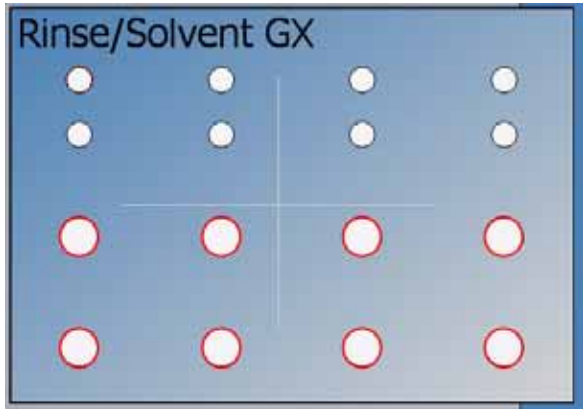
Rinse/Solvent GX (Rack)



Flow-Through Rinse Locations (Top Wells)

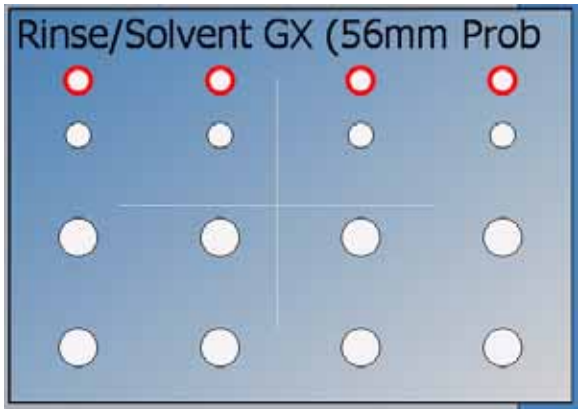


Inside Rinse Locations (Second Row of Wells from Top)

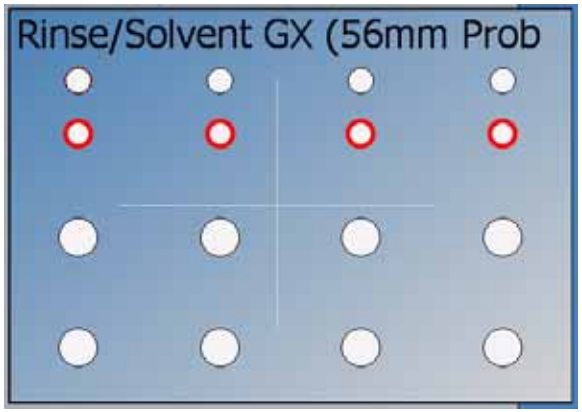


Solvent/Transfer Ports (Bottom Two Rows of Wells)

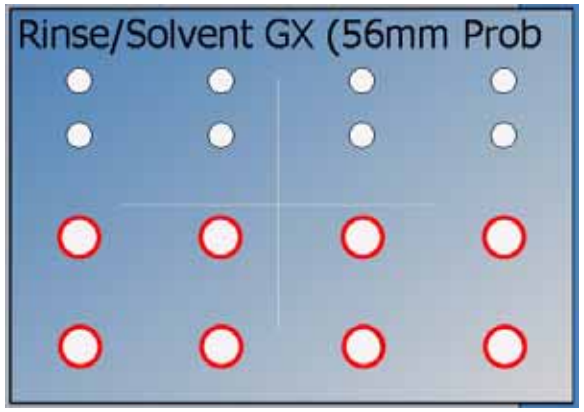
Rinse/Solvent GX (56mm Probes) (Rack)



Flow-Through Rinse Locations (Top Wells)



Inside Rinse Locations (Second Row of Wells from Top)



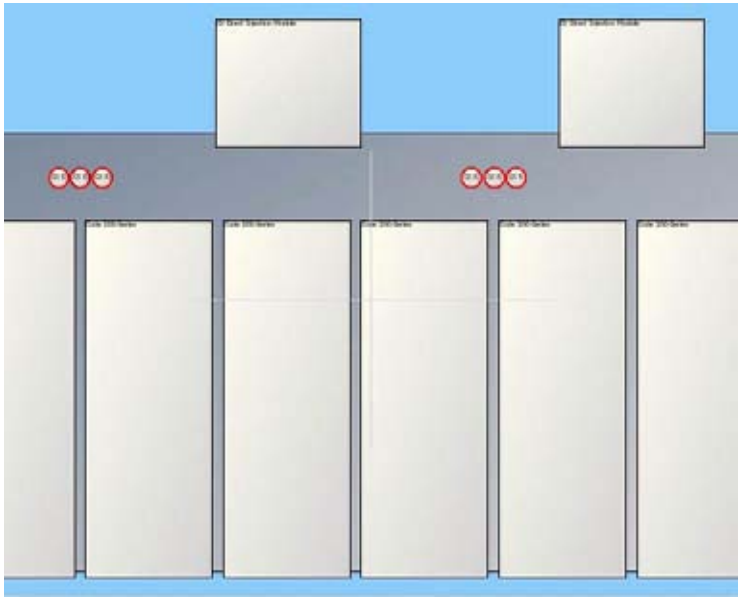
Solvent/Transfer Ports (Bottom Two Rows of Wells)

GX-281 Liquid Handler

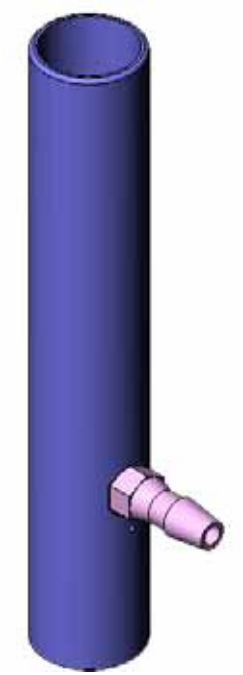
Bed Layout Tray (Template)

GX-281

GX Rinse Station (Footprint)



GX-281 Rinse Stations



Drain/Rinse Station for Inside Rinse of Probe

Drain/Rinse Station GX Extra Tall (Rack)

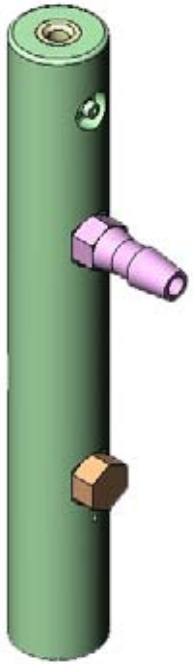
Use	Z Clamp Height (mm)	Rinse Station Part Number
Inside Rinse	210	26034556

Drain/Rinse Station GX Tall (Rack)

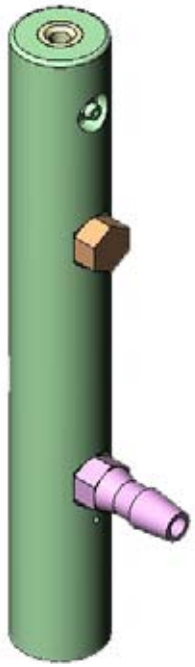
Use	Z Clamp Height (mm)	Rinse Station Part Number
Inside Rinse	175	26034555

Drain/Rinse Station GX Short (Rack)

Use	Z Clamp Height (mm)	Rinse Station Part Number
Inside Rinse	125	26034554



Rinse Station for Outside Rinse of Probe (Static)



Rinse Station for Outside Rinse of Probe (Flowing)

Rinse Station GX Extra Tall (Rack)

Use	Z Clamp Height (mm)	Rinse Station Part Number
Outside Rinse (static or flowing)	210	26034553

Rinse Station GX Tall (Rack)

Use	Z Clamp Height (mm)	Rinse Station Part Number
Outside Rinse (static or flowing)	175	26034551

Rinse Station GX Short (Rack)

Use	Z Clamp Height (mm)	Rinse Station Part Number
Outside Rinse (static or flowing)	125	26034552

Bed Layout and Utilities

H

Access the Bed Layout and Utilities by choosing Liquid Handling|Utilities|Bed Layout and Utilities.

Custom Templates

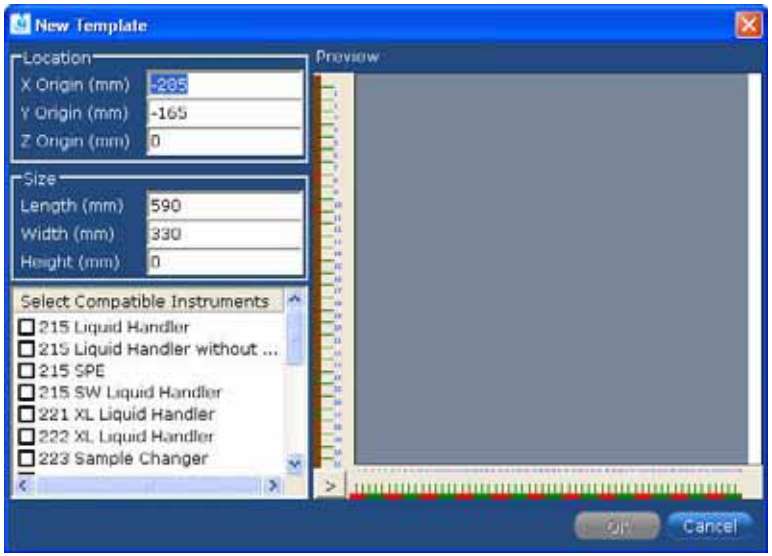
Design your template with footprints. You can select pre-defined footprints or define a footprint of your own. Information stored concerning the template includes physical dimensions and the origin (where 0,0,0 is).

Keywords:

- **Template**: The bottom, required layer of a Bed Layout. Only footprints can be added to templates.
- **Origin**: Defined by the user, the location of the coordinates X=0, Y=0, Z=0.
- **Footprint**: A placeholder or area that accepts racks.
- **Rack**: A rack requires a footprint before it can be added to a template. Examples of racks are Racks, Rinse Stations, Injection Port Bars, Tip Boxes, and Microplates.

Creating a Template

1 Click **NEW TEMPLATE**. The New Template window appears.



The New Template Window

2 In the New Template window, enter the template dimensions.

3 Select one or more compatible instrument(s) by checking the box.

4 Optionally, click > and then do the following:

a) To zoom the Template, toggle the Auto Scale selection off.

b) To zoom in on the Template, click once or repeatedly (increments by 0.5). TRILUTION LH will zoom in to the center of the template

c) To zoom out on the Template, click once or repeatedly.

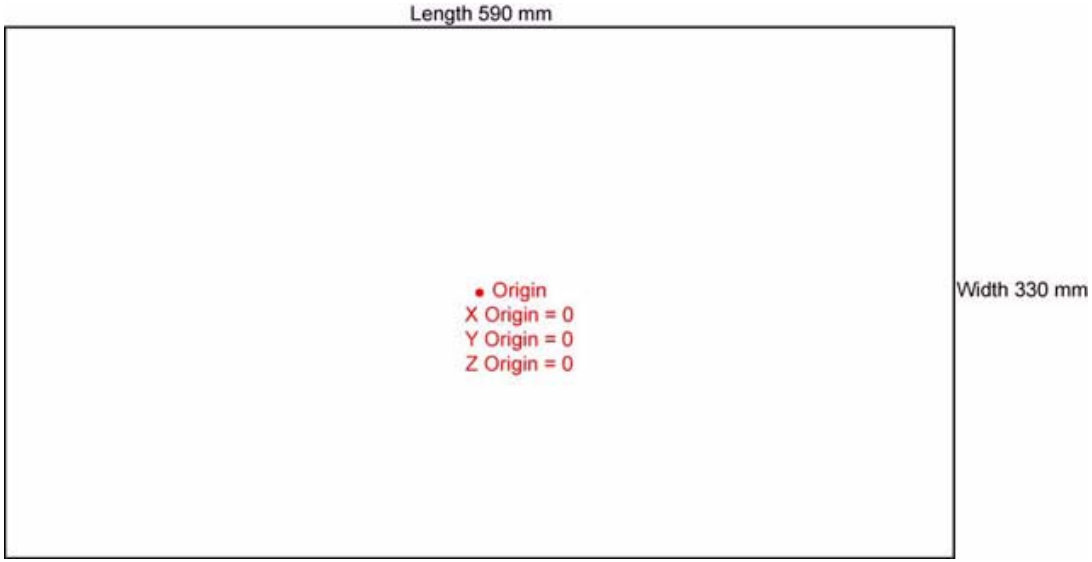
5 Click **OK**.

6 Click **SAVE AS**.

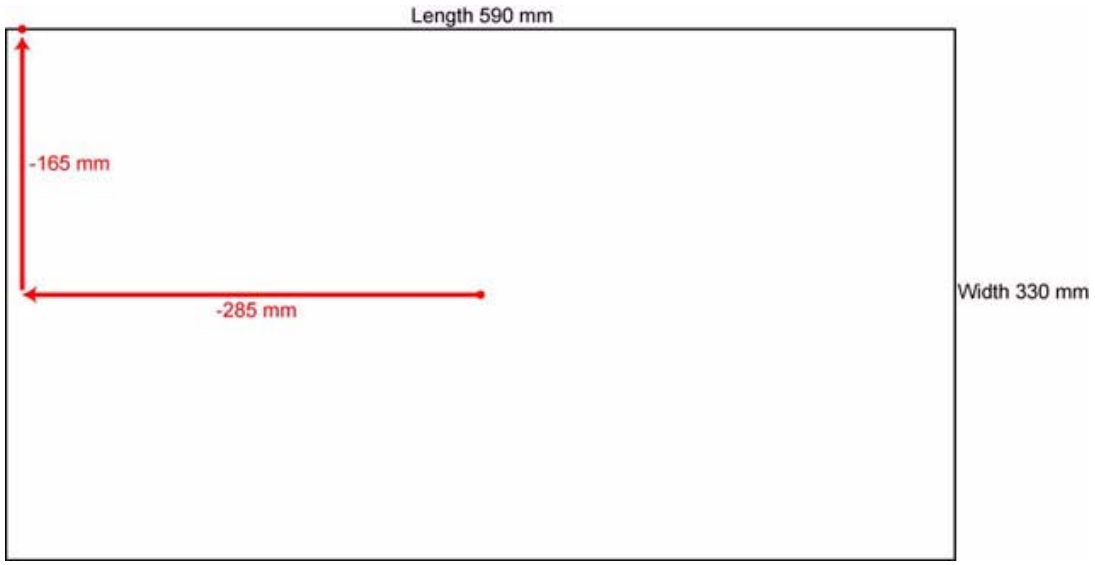
7 Enter the template name, description, and short description in the Save As Template window.

8 Click **OK**.

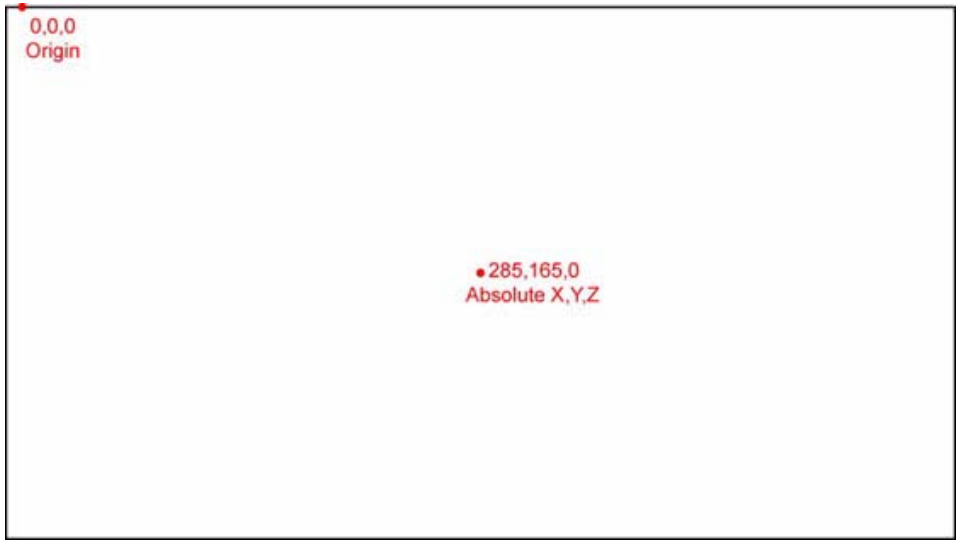
Origin



Origin (X Origin=0, Y Origin=0, Z Origin=0)



Move X-285 and Y-165



Origin (Default Settings Applied)

Adding Footprints

A footprint is an area that accepts racks. Gilson supplies footprints or create custom footprints.

Gilson-supplied footprints cannot be modified or deleted.

Adding Single Footprints

1 Click on the template, it highlights in red.

2 Right-click and select **ADD ELEMENTS...**.

3 Select a footprint.

4 Enter the X, Y, and Z Relative positions.

The position is calculated with respect to the center of the template (which may or may not be 0,0,0 depending on where the origin was set).

When X = 0 and Y = 0, the center of the element is situated over the center of the template.

When Z = 0, the bottom of the element is placed at the same level as the top of the template.

5 Optionally, select a value from the Rotation drop-down. Default is 0°. (Rotation values: 90°, 180°, and 270°)

6 Click **ADD**. Confirm that the element has been added in the Preview.

7 Click **CLOSE** to return to the Template.

Adding Multiple Footprints

This option allows you to add an array of identical footprints to a template.

1 Right-click on a template and select **ADD ELEMENTS...**.

2 Select the footprint that you want to add as an array.

3 Select the Multiple check box to enable the necessary fields.

4 Enter the X, Y, and Z Relative positions for the center of the element in column 1, row 1.

The position is calculated with respect to the center of the template (which may or may not be 0,0,0 depending on where the origin was set).

When X = 0 and Y= 0, the footprint in column 1, row 1 is centered over the center of the template.

5 Specify the number of columns and the number of rows.

6 Specify the distance between wells within a column (Y Offset) and the distance between wells within a row (X Offset).

7 Optionally, select a value from the Rotation drop-down. Default is 0°. (Rotation values: 90°, 180°, and 270°)

8 Click **ADD**. Confirm that the elements were added in the Preview.

9 Click **CLOSE** to return to the Template.

Creating a Footprint

1 Right-click the template and select Add Elements. The Template Elements dialog appears.

2 In the Template Elements dialog click **NEW**.

3 Enter a Footprint Name for the footprint.

4 Select the Shape: Rectangle or Circle.

   a) For a rectangle, enter the Length and Width.

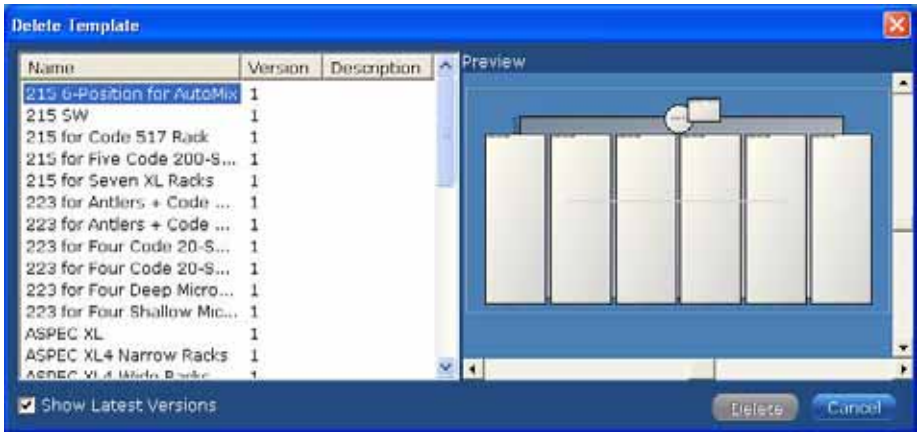
   b) For a circle, enter the Diameter.

5 Click **OK**.

The New Footprint Window

Deleting a Template

1 Click **DELETE TEMPLATE**. The Delete Template window displays.


Delete Template
Name
Version
Description
Preview
215 6-Position for AutoMix 1
215 SW 1
215 for Code 517 Rack 1
215 for Five Code 200-S... 1
215 for Seven XL Racks 1
223 for Antlers + Code ... 1
223 for Antlers + Code ... 1
223 for Four Code 20-S... 1
223 for Four Code 20-S... 1
223 for Four Deep Micro... 1
223 for Four Shallow Mic... 1
ASPEC XL 1
ASPEC XL4 Narrow Racks 1
Show Latest Versions
Delete
Cancel

The Delete Template Window

2 Select the template to be deleted and click **DELETE**. If more than one version of the template exists, TRILUTION LH will confirm that you want to delete all versions of the template.

Custom Racks

Create a rack by specifying the dimensions for the rack and the wells or elements to be used on the rack. Either create custom wells or elements or use the pre-defined wells and elements provided by Gilson. Wells and elements can be added individually or as an array.

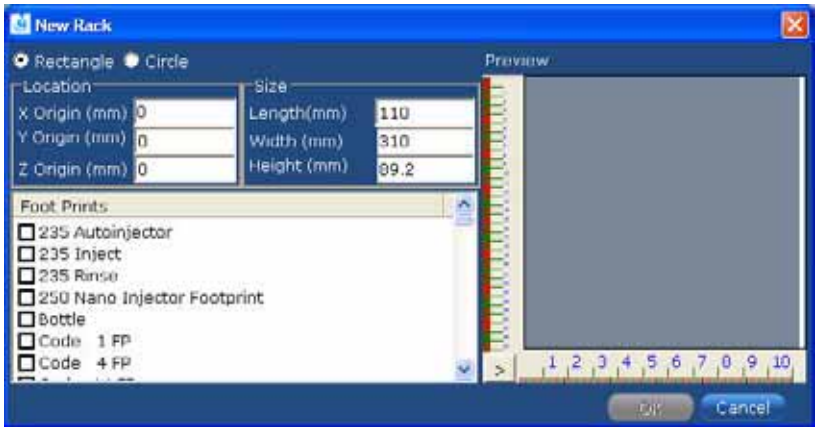
Information stored concerning the rack includes its physical dimensions, the type of wells that it holds and their location, and the templates on which the rack can be placed.

Keywords:

- **Element**: A rack element is a footprint or a well.
- **Footprint**: Area that accepts racks.
- **Wells**: Wells (specifically custom wells) can only go in racks.
- **Rack**: A rack requires a footprint before it can be added to a template. Examples of racks are Racks, Rinse Stations, Injection Port Bars, Tip Boxes, and Microplates.
- **Template**: The template is the bottom, a required layer of a Bed Layout. Only footprints can be added to templates.
- **Handle**: A position designated in a rack which makes the rack mobile. Zones cannot be assigned to a handle.
- **Target**: A position defined within a well. Zones can be assigned to a target.

Creating a Rack

1 Click **NEW RACK** button, the New Rack dialog appears.



2 In the New Rack window, set the rack shape: Rectangle or Circle.

3 Enter the dimensions.

a) For a rectangular rack, define X (width), Y (length), and the height.

b) For a circular rack, define the diameter and the height.

The rack height is measured with respect to the point of contact between the rack and its holder.

For a rack placed on a template, 'Height' is measured with respect to the rack bottom.

For a rack placed on antlers, 'Height' is measured with respect to the underside of the rack tabs. A height of "0" means that the top of the rack is level with the plane of the support.

This reference is important, when a footprint or well is added to a custom rack, the height Z is calculated with respect to this plane. Also, the probe height in a custom rack is calculated with respect to this plane.

You must be very careful when designing a custom rack that can be placed on antlers and on a tray, as the probe height in tasks will be calculated with respect to this coordinate.

4 Enter the coordinates for the rack Origin. The default is 0,0,0 which is the center of the rack.

5 Select the footprint(s) where the rack can be placed. You can select several footprints.

6 Click **OK**.

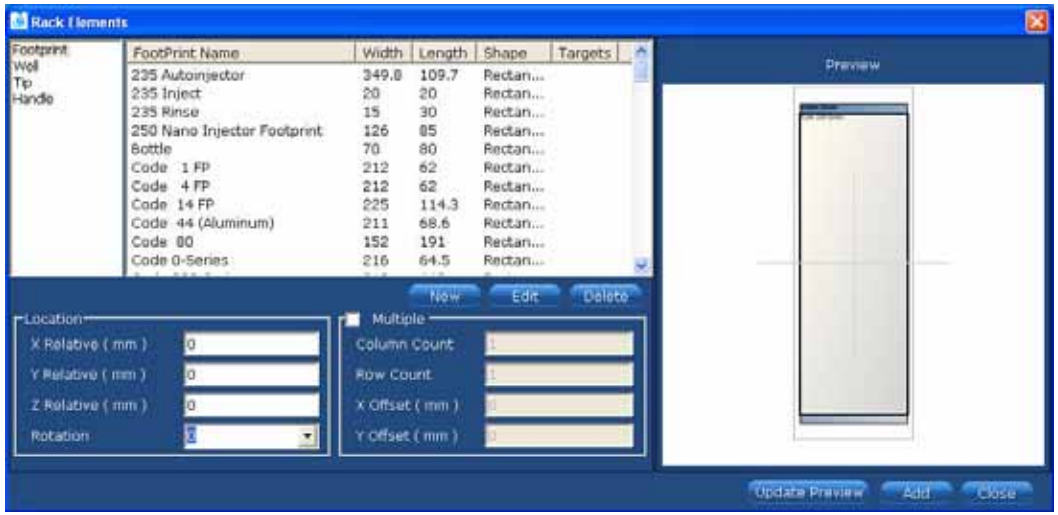
Adding Elements

Add a single element or an array of elements.

Adding a single element

1 Right-click on a rack and then select **ADD ELEMENTS...**.

2 Select an element: Footprint, Well, Tip, or Handle.



The Rack Elements Window

3 Enter the X, Y, and Z Relative positions.

The position is calculated with respect to the center of the rack.

When X = 0 and Y= 0, the center of the element is positioned over the center of the rack.

When Z = 0, the bottom of the element is placed at the same level as the top of the rack: level with the point of contact between the rack and its holder (tray or antler).

4 Optionally, select a value from the Rotation drop-down. Default is 0°. (Rotation values: 90°, 180°, and 270°)

5 Click **ADD**. Confirm that the element was added in the Preview.

6 Click **CLOSE** to return to the Rack.

Adding multiple elements

This option allows you to add an array of identical elements to a rack.

1 Right-click on a rack and then select **ADD ELEMENTS...**.

2 Select the element that you want to add as an array.

3 Select the Multiple check box to enable the necessary fields.

4 Enter the X, Y, and Z Relative positions for the center of the element in column 1, row 1.

The position is calculated with respect to the rack center.

When X = 0 and Y= 0, the element in column 1, row 1 is centered over the center of the rack.

When Z = 0, the bottom of the element is placed at the same level as the top of the rack: level with the point of contact between the rack and its holder (tray or antler).

5 Specify the number of columns and the number of rows.

6 Specify the distance between wells within a column (Y Offset) and the distance between wells within a row (X Offset).

7 Optionally, select a value from the Rotation drop-down. Default is 0°. (Rotation values: 90°, 180°, and 270°)

8 Click **ADD**. Confirm that the elements were added in the Preview.

9 Click **CLOSE** to return to the Rack.

Creating a New Element

Elements can be created for non-standard equipment.

Creating a Footprint

1 Right-click on a rack and then select **ADD ELEMENTS...**.
2 Click Footprint and then **NEW**.
3 Enter a Footprint Name for the footprint.
4 Select the Shape: Rectangle or Circle.
   a) For a circle, enter the Diameter.
   b) For a rectangle, enter the Length and Width.
5 Click **OK**.

Creating a Well

1 Right-click on a rack and then select **ADD ELEMENTS...**.
2 Click Well and then **NEW**.
3 Enter a Well Name for the well.
4 Select a Well Type from the drop-down list.

5 Select the Shape: Rectangle or Circle.

a) For a circular well, enter the Diameter, Height, and Maximum Volume for the well.

b) For a rectangular well, enter the Length, Width, Height, and Maximum Volume for the well.

Maximum Volume must be a number other than zero (0).

6 Click **OK**.

Creating a Target

1 Right-click on a rack and then select **ADD ELEMENTS...**.

2 Click Well and then click **NEW** or **EDIT**.

3 Right-click in the Targets grid and select **ADD**.

4 Enter a Target Name for the target.

5 Select a Target Type from the drop-down list.

6 Enter the X, Y, and Z Relative positions for the target. The position is calculated with respect to the center of the well.

7 Click **OK** to exit the New Target dialog.

Modifying a Target

1 Right-click on a rack and then select **ADD ELEMENTS...**.

2 Select the Well that contains the Target and then click **EDIT**. The Well Properties dialog is displayed.

3 Right-click on the Target and select **EDIT**.

4 Change the Target Name for the target, if desired.

5 Change the relative X, Y, and Z positions for the target, if desired. The position is calculated with respect to the center of the well.

6 Click **OK** to exit the Target Properties dialog.

Deleting a Target

1 Right-click on a rack and then select **ADD ELEMENTS...**.

2 Select the Well that contains the Target and then click **EDIT**. The Well Properties dialog is displayed.

3 Right-click on the Target and select **DELETE**.

4 Click **OK** to exit the Target Properties dialog.

Editing a Custom Element

You can perform the following editing actions.

Viewing Elements

1 To view the element properties, right-click on the element and select **PROPERTIES...**.

2 Select the Advanced check box to view the attributes for the element.

The relative coordinates display. The coordinates are relative to the center of the holder.

Moving Single Elements

1 Right-click on the element and select Properties.

2 Change the appropriate position coordinates.

Deleting Elements

You can only delete user-defined elements.

1 Open the Rack Elements dialog: right-click on an element, then select **ADD ELEMENTS...**.

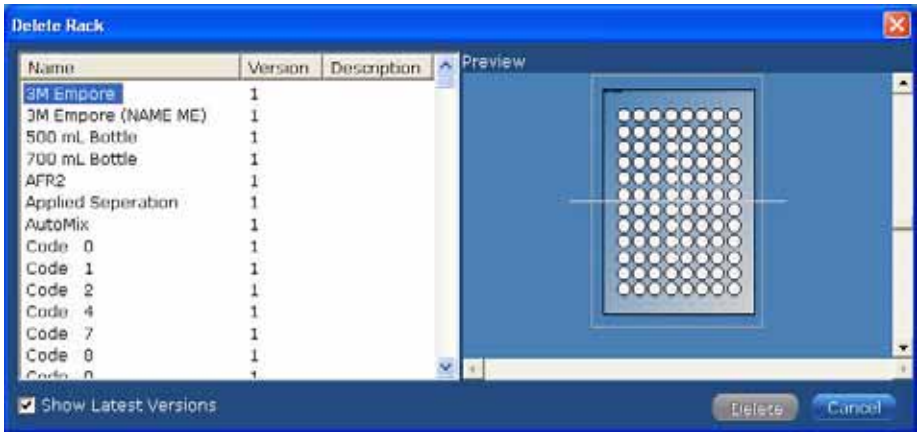
2 Click on the type of custom element that you want to delete: a footprint, well, or tip.

3 Select the specific element you want to delete from the list.

4 Click **DELETE**.

Deleting a Rack

1 Click **DELETE RACK**. The Delete Rack window appears.



The Delete Rack Window

2 Select the rack to be deleted and click **DELETE**. If more than one version of the rack exists, TRILUTION LH will confirm that you want to delete all versions of the rack.

Exporting Racks and Templates

1 Click **EXPORT**.

2 Select the Rack List or Template List option button.

3 Select a Rack or Template.

4 Click . The Browse For Folder window is displayed.

5 On the Browse For Folder window, select a folder to which the Rack or Template will be exported and then click **OK**.

6 Click **OK**. On completion of the export operation, the Rack or Template is saved in the specified folder with a .LHR (Rack) or .LHT (Template) extension. The TRILUTION information dialog box is displayed.

   a) On the TRILUTION information dialog box, do the following:

      1) To view the log information of the export operation, click **DETAILS**.

      2) Click **OK**.

Importing Racks and Templates

1 Click **IMPORT**. The Select Rack/Template Files window is displayed.

2 From the Select Rack/Template Files window, do the following:

a) Browse for and select the Rack or Template Exported Files.

To select multiple Racks or Templates in a sequential order, hold SHIFT + any arrow key simultaneously.

To select Racks or Templates in a random order, hold CTRL and select multiple Racks or Templates with the mouse.

b) Click **OPEN**. On completion of the Import operation, the TRILUTION information box is displayed.

c) On the TRILUTION information dialog box, do the following:

1) To view the log information of the import operation, click **DETAILS**.

2) Click **OK**.

Closing Bed Layout and Utilities

Do one of the following:

- Click ( ) on the lower right corner to exit and return to the TRILUTION menu.
- Click ( ) on the upper right corner to close the utility.

Electronic Record Management (ERM) Features

The implementation of an Electronic Record Management (ERM) system can be complex. TRILUTION LH has the ability to assist in attaining 21 CFR Part 11 compliance through the implementation of Electronic Record Management. The ERM Features allow electronic records security and tracking (audit trails), electronic signatures, and method versioning of records, as well as permitting customized user access levels within the software. This section describes how to set up and use these features.

For information about activating the ERM features, see **ERM** on page 1-16.

ERM Administration

ERM Features are accessed from the **LIQUID HANDLING**>**UTILITIES**>**ERM**>**ERM FEATURES** menu by a user assigned to the default Admin group. In this dialog box, choose whether or not to enable electronic record management (ERM) features. Check boxes default cleared, thus ERM defaults disabled. When Enable ERM Features is selected, the Audit log is enabled. When Enable Signature Points is selected, a signature will be required by every user for every save. These signatures will be tracked in the E-Signature log.

For information on how to set up users and groups, See **Users and Groups** in ***Chapter1***.

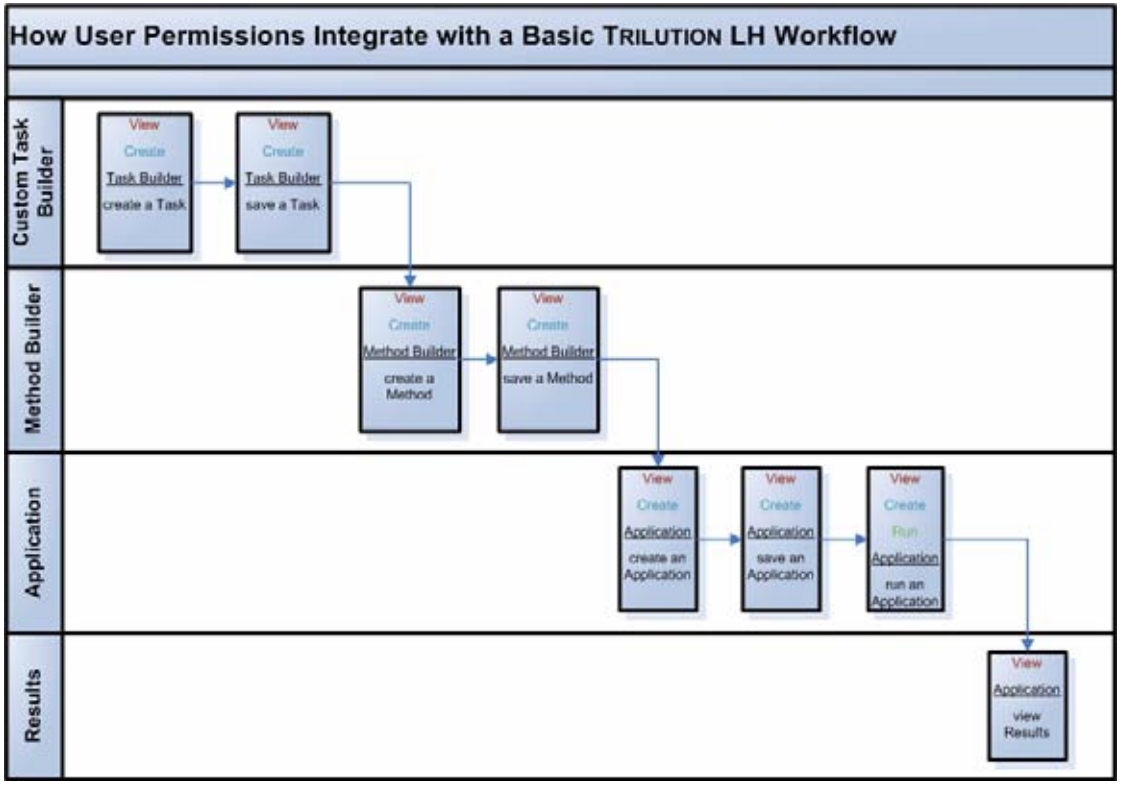
Users and Groups

During the TRILUTION LH installation, by default, two groups are created: Admin and Analyst. “Administrator” is the default user in the Admin group. The Admin group is assigned all rights. “Analyst” is the default user in the Analyst group. The Analyst group can create, modify, view, and run applications in TRILUTION LH.

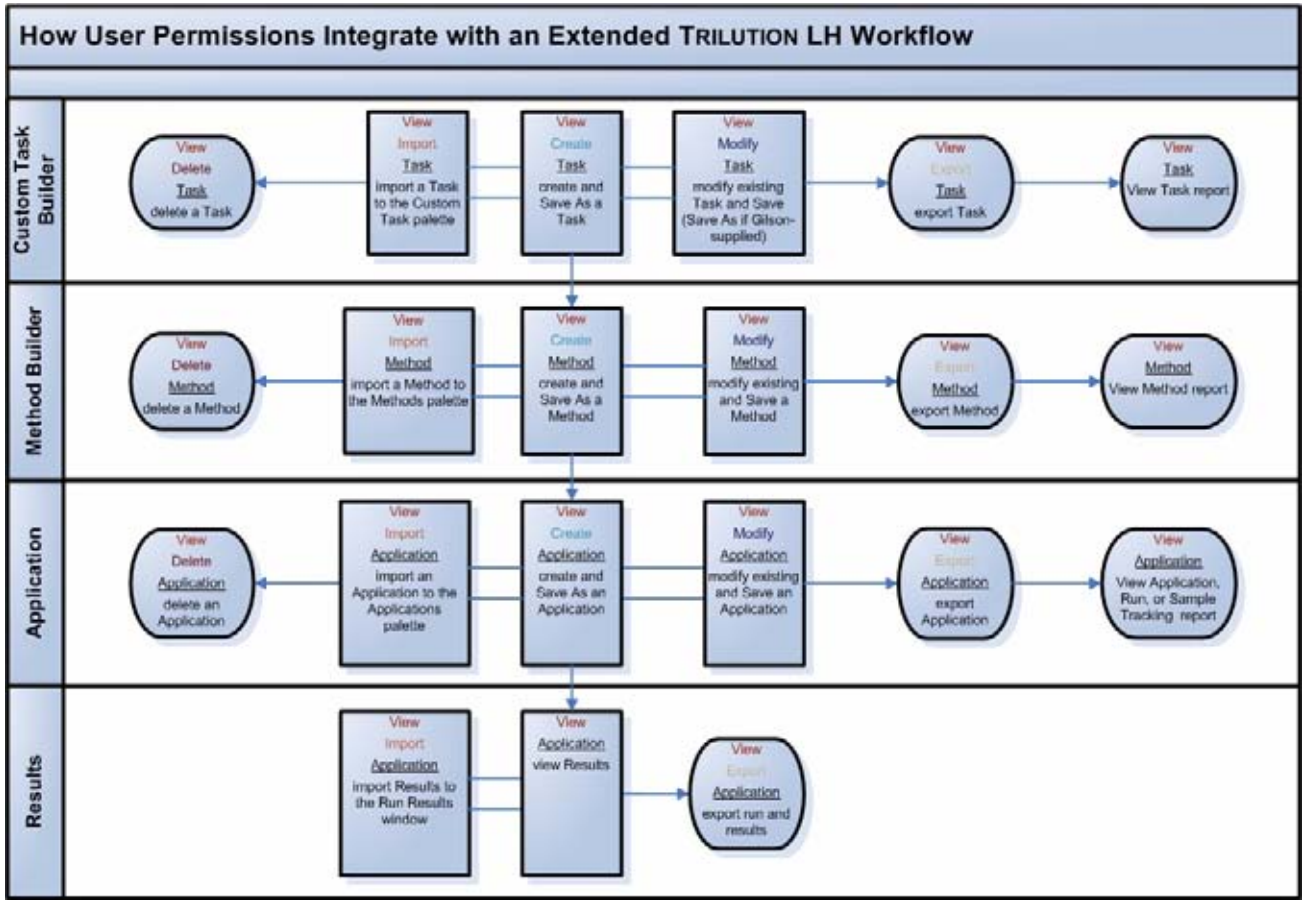
Group	*Default Permissions*
Admin	• Create • Modify • Delete • View • Import • Export • Run
Analyst	• Create • Modify • View • Run

Default Permissions for Default Groups

The graphic below depicts which permissions are required for a basic workflow. The permissions are listed first, followed by the builder in which those permissions must be granted, followed by the action.



The graphic below depicts the use of permissions for a more detailed workflow.


How User Permissions Integrate with an Extended TRILUTION LH Workflow
Custom Task Builder
View Delete Task delete a Task
View Import Task import a Task to the Custom Task palette
View Create Task create and Save As a Task
View Modify Task modify existing Task and Save (Save As if Gilson-supplied)
View Export Task export Task
View Task View Task report
Method Builder
View Delete Method delete a Method
View Import Method import a Method to the Methods palette
View Create Method create and Save As a Method
View Modify Method modify existing and Save a Method
View Export Method export Method
View Method View Method report
Application
View Delete Application delete an Application
View Import Application import an Application to the Applications palette
View Create Application create and Save As an Application
View Modify Application modify existing and Save an Application
View Export Application export Application
View Application View Application, Run, or Sample Tracking report
Results
View Import Application import Results to the Run Results window
View Application view Results
View Export Application export run and results

GSIOC Configuration Editor J

The GSIOC Configuration Editor enables you to modify COM (serial communications) port and baud rate information. Or, you can use this editor if incorrect information appears in the GSIOC Utility window.

GSIOC Configuration Editor

1 Locate the GSIOC Configuration Editor (GSCONFIG.EXE) using Windows Explorer or the shortcut at Start—Programs—Gilson Applications—Utilities—GSIOC Configuration Editor. During installation, this editor was stored to C:\GILSON\UTIL unless the installation path was changed.

2 Start the editor. The GSIOC Configuration Editor window appears.

3 In the Port box, indicate the computer's serial communications port (COM) port to which the Gilson interface instrument (such as the liquid handler or 506C System Interface) is connected.

4 Click 19200 or 9600 to select the baud. The baud is the rate of data transmission between the computer and the Gilson instrument.

5 Click OK to save the changes. A message box appears indicating that the computer must be restarted before any changes become effective.

GSIOC Utility

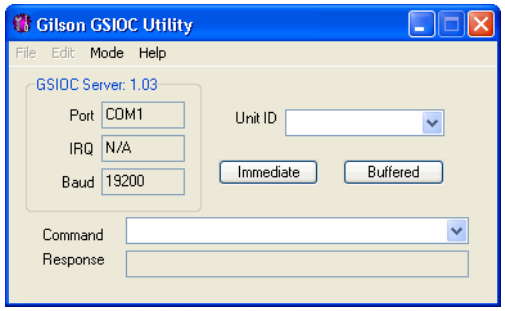
K

The GSIOC Utility allows you to issue commands to Gilson GSIOC instruments. Your Gilson-authorized representative may ask you to use this utility to verify that an instrument is connected correctly to the computer. For communication to occur, the Gilson instrument must be connected via an RS-232 connection to the computer or connected via a GSIOC connection to a Gilson interface instrument that is connected to the computer.

Starting the GSIOC Utility

1 Locate the GSIOC Utility (GSUTIL32.EXE) using Windows Explorer or the shortcut at
START>(ALL) PROGRAMS>GILSON APPLICATIONS>UTILITIES>GSIOC UTILITY.
During installation, this utility was stored to C:\GILSON\UTIL unless the installation path was changed.

2 Start the utility. The GSIOC Utility window appears.



Reviewing the Port and Baud Information

In the GSIOC Utility window, review the COM port and baud information. If any information is incorrect or missing, close the GSIOC Utility and use the GSIOC Configuration Editor to update the information. Refer to ***Appendix J, GSIOC Configuration Editor***.

Listing GSIOC Instruments

Using the GSIOC Utility, you can determine the instruments currently connected to the computer.

In the Mode menu, select Scan!

The Unit ID list box displays the unit IDs and the version of the connected instruments. If any connected instruments are missing from the list, ensure that the proper RS-232 or GSIOC connection exists between the computer and the instruments, and that the instruments do not have duplicate unit ID numbers.

Basic Mode

In the Basic mode, immediate and buffered GSIOC commands can be sent to specific Gilson instruments.

Review the Port, IRQ, and Baud information in this window. If any information is incorrect or missing, close the GSIOC Utility and use the GSIOC Configuration Editor to update the information.

There are two drop-down menus in the Basic mode of the Gilson GSIOC Utility: Mode Menu and Help Menu.

Basic Mode Buttons and Features

Immediate button

Sends an immediate command to the Unit ID selected.

Immediate commands request status information from an instrument. These commands are executed immediately, temporarily interrupting any command in progress. Each command is a string of no more than 40 characters.

You can find a list of valid immediate commands for each instrument in its user's guide.

Buffered button

Sends a buffered command to the Unit ID selected.

Buffered commands send instructions to an instrument. These commands are executed one at a time. Each command is a string of no more than 40 characters.

You can find a list of valid buffered commands for each instrument in its user's guide.

Command field

Where the command to be sent is specified. For more information on sending commands, see **Send an Immediate Command** on page K-24 or **Send a Buffered Command** on page K-25.

Response field

Returns a response to an immediate or buffered command.

The response to a successfully completed buffered command is “ok”.

Refer to the user’s guide for the Gilson instrument for a description of the valid response to immediate commands.

The response to an unsuccessfully completed immediate or buffered command is “#error”.

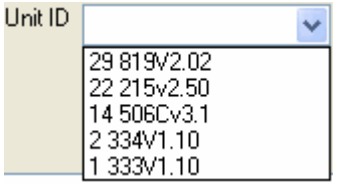
Basic Mode Menus

Mode Menu

There are three options in the Mode menu: Scan!, Advanced, and Ghost.

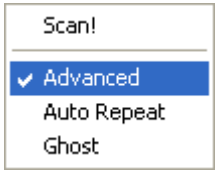
Scan!

The Scan! option on the Mode menu allows you to scan for GSIOC instruments. After a scan, the Unit ID list box displays the unit IDs and the version of the connected instruments. If any connected instruments are missing from the list, ensure that the proper RS-232 or GSIOC connection exists between the computer and the instruments, and that the instruments do not have duplicate Unit ID numbers.



Advanced

The advanced option in the Mode menu allows you to switch between the Basic and Advanced modes. A check mark means that the GSIOC Utility is in Advanced mode.



Ghost

The Ghost option in the Mode menu makes the GSIOC Utility window transparent (and always on top). This allows you to view another window behind the Utility. The Utility will remain fully functional in the Ghost mode.

Help Menu

Help Topics

When selected, the Help window for the Gilson GSIOC Utility appears.

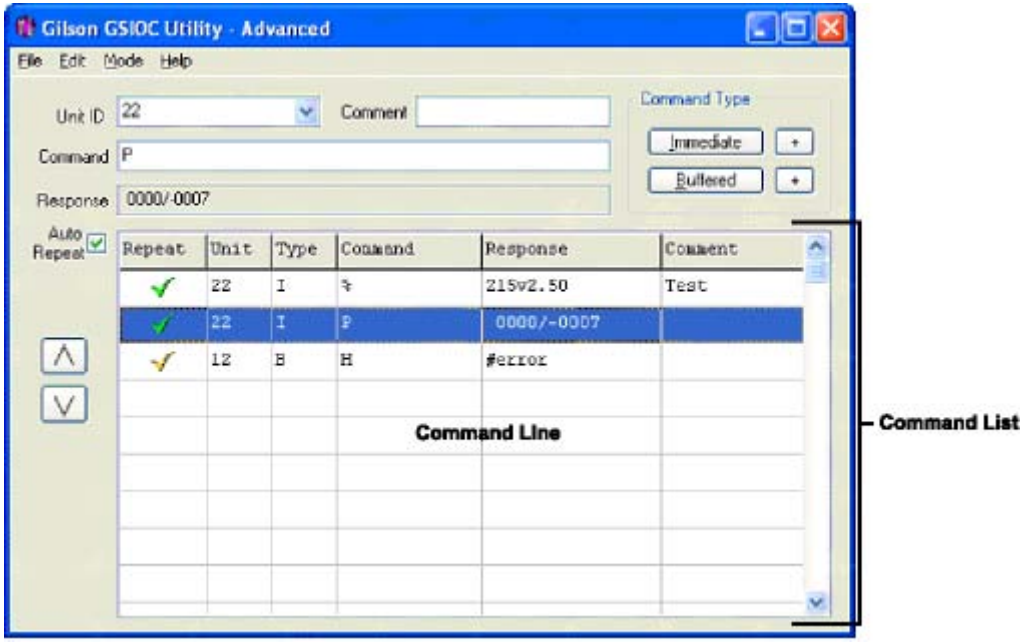
About

When selected, the About window appears.

This window displays the version of the Gilson GSIOC Utility, the GSIOC32.DLL, and the GSIOC Server or Driver; and the Port, IRQ, and Baud set by the GSIOC Configuration Editor.

Advanced Mode

In the Advanced mode, immediate and buffered GSIOC commands can be sent to specific Gilson instruments. In this mode, immediate and buffered commands with comments can be saved to a command list to be used as needed. The command lines can be repeated automatically to monitor the status of the instrument.



Review the Port, IRQ, and Baud information by selecting About... from the Help menu. If any information is incorrect or missing, close the GSIOC Utility and use the GSIOC Configuration Editor to update the information.

There are four drop-down menus in the Advanced mode of the Gilson GSIOC Utility: File Menu, Edit Menu, Mode Menu, and Help Menu.

Advanced Mode Buttons and Features

+ button

The + next to Immediate is used to insert an immediate command in the command list. For more information, see **Insert an Immediate Command** on page K-22.

The + next to Buffered is used to insert a buffered command in the command list. For more information, see **Insert a Buffered Command** on page K-23.

Arrow Up or Arrow Down button

These buttons (∧ or ∨) are used to change the position of a command in the command list.

To move a command

Highlight the command in the command list and use ∧ to move the command up in the list or ∨ to move the command down in the list.

Immediate button

Sends an immediate command to the Unit ID selected. The Comment field is not used.

Selecting the Immediate button will not add the command to the command list.

For more information, see **Send an Immediate Command** on page K-24.

Buffered button

Sends a buffered command to the Unit ID selected. The Comment field is not used.

Selecting the Buffered button will not add the command to the command list.

For more information, see **Send a Buffered Command** on page K-25.

Response field

Returns a response to an immediate or buffered command.

The response will become gray after 15 seconds if no response is registered.

The response to a successfully completed buffered command is “ok”.

Refer to the user’s guide for the Gilson instrument for a description of the valid response to the immediate commands.

The response to an unsuccessfully completed immediate or buffered command is “#error”.

To send a command line

Double-click on the Unit, Type, Command, Response, or Comment field to send the immediate or buffered command for that specific command line.

Command line column headings

Repeat

A green check mark (✓) in the Repeat column means that an immediate command will automatically repeat when the Auto Repeat option is checked. Double-click on the Repeat field to select or deselect the Auto Repeat for that command line.

A yellow check mark (✓) in the Repeat column means that a buffered command will automatically repeat when the Auto Repeat option is checked. Double-click on the Repeat field to select or deselect the Auto Repeat option for that command line.

Unit

This is the Unit ID for the instrument in the command line.

Type

I - Immediate Command, B - Buffered Command

Command

This is the GSIOC command for the command line.

Response

This is the GSIOC response when the command line is initiated with a double-click on the Unit, Type, Command, Response, or Comment field. The response will become gray after 15 seconds if no response is registered.

Comment

This is an optional comment that can be added to the command line.

Advanced Mode Menus

File Menu

There are four options in the File menu: Open, Save, Save As..., and Exit.

Open

The Open option in the File menu allows you to open previously created command lists (GSUTIL32 files). The extension for a GSUTIL32 file is .GSU.

Save

The save option in the File menu allows you to save the Advanced commands to GSUTIL32.GSU. The GSUTIL32.GSU file is automatically created in the location where GSUTIL32.EXE is stored.

The Advanced commands will automatically be saved to GSUTIL32.GSU if the Gilson GSIOC Utility is exited without saving.

The GSUTIL32. GSU is automatically opened when the Advanced mode is selected from the Mode menu.

Save As...

The Save As... option on the File menu allows you to save the Gilson GSIOC Utility commands that are currently defined. The file's name and path must be specified.

Exit

Closes the Gilson GSIOC Utility software.

Edit Menu

There are four options in the Edit Menu: Insert Immediate, Insert Buffered, Selection, and Font....

Insert Immediate

The Insert Immediate option in the Edit menu allows you to insert an immediate command in the command list. The new command will be added to the last line in the command list.

The GSIOC Command will not be inserted if there is already a command line in the list with the same Unit ID and Command.

For more information, see **Insert an Immediate Command** on page K-22.

Insert Buffered

The Insert Buffered option in the Edit menu allows you to insert a buffered command in the command list. The new command will be added to the last line in the command list.

The GSIOC Command will not be inserted if there is already a command line in the list with the same Unit ID and Command.

For more information, see **Insert a Buffered Command** on page K-23.

Selection

Delete (Ctrl + D)

Deletes the highlighted command from the command list.

Up (Ctrl + U)

Moves the highlighted command up in the command list.

Down (Ctrl + D)

Moves the highlighted command down in the command list.

Execute (Ctrl + E)

Executes the highlighted command.

Repeat (Ctrl + R)

Adds or removes the repeat option for the highlighted command.

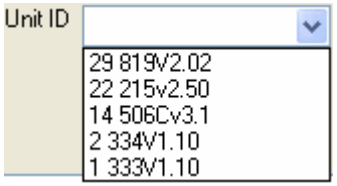
Font...

The Font... option on the Edit menu allows you to change the font options for the command list fields and headers, as well as the Unit ID, Comment, and Command text boxes.

Mode Menu

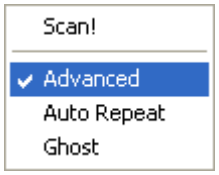
There are four options in the Mode menu: Scan!, Advanced, Auto Repeat, and Ghost.

Scan!



The Scan! option on the Mode menu allows you to scan for GSIOC instruments. After a scan, the Unit ID list box displays the unit IDs and the version of the connected instruments. If any connected instruments are missing from the list, ensure that the proper RS-232 or GSIOC connection exists between the computer and the instruments, and that the instruments do not have duplicate Unit ID numbers.

Advanced



The advanced option in the Mode menu allows you to switch between the Basic and Advanced modes. A check mark means that the GSIOC Utility is in Advanced mode.

Auto Repeat

The Auto Repeat option on the Mode menu allows you to repeat command lines that appear in the command list.

A command line will only repeat if a check mark appears in the Repeat field. A check mark can be added by double-clicking on the Repeat field and selecting the Auto Repeat check box.

Starting from the top command line, this mode will refresh one repeating command line every 1/10th of a second. For example, if there are ten command lines with Repeat selected, each of these command lines will be initiated every second.

Auto Repeat mode is useful for monitoring the instrument using immediate commands and is designated in the Repeat field with a green check mark.

Auto Repeat mode is not intended to be used as a programming tool with buffered commands. Repeating buffered commands will be executed at a fixed time interval regardless if a command has finished. For this reason, the check mark in the buffered command line is yellow.

Auto Repeat mode can be selected from the Mode menu or by selecting the check box next to Auto Repeat.

Auto Repeat is deselected by default with the Advanced mode is first opened. When Gilson GSIOC Utility - Advanced is saved or closed, the status of Auto Repeat is saved.

Ghost

The Ghost option in the Mode menu makes the GSIOC Utility window transparent (and always on top). This allows you to view another window behind the Utility. The Utility will remain fully functional in the Ghost mode.

Help Menu

Help Topics

When selected, the Help window for the Gilson GSIOC Utility appears.

About

When selected, the About window appears.

This window displays the version of the Gilson GSIOC Utility, the GSIOC32.DLL, and the GSIOC Server or Driver; and the Port, IRQ, and Baud set by the GSIOC Configuration Editor.

Commands

Immediate Command

Immediate commands request status information from an instrument. These commands are executed immediately, temporarily interrupting any command in progress. Each command is a string of no more than 40 characters.

You can find a list of valid immediate commands for each instrument in its user's guide.

Buffered Command

Buffered commands send instructions to an instrument. These commands are executed one at a time. Each command is a string of no more than 40 characters.

You can find a list of valid buffered commands for each instrument in its user's guide.

Insert an Immediate Command

There are two ways to insert an immediate command in Advanced mode.

Using the Edit menu

1 From the Unit ID drop-down box, select the unit ID of the instrument to send the command to.

2 Type a Command and Comment. (The comment is optional.)

3 Select Insert Immediate from the Edit menu. The new command will be inserted at the bottom of the command list.

Note: The command will not be inserted if there is already a command line in the list with the same Unit ID and command.

Using the + button

1 From the Unit ID drop-down box, select the unit ID of the instrument to send the command to.

2 Type a Command and Comment. (The comment is optional.)

3 Click the + button next to the Immediate button. The new command will be inserted at the bottom of the command list.

Note: The command will not be inserted if there is already a command line in the list with the same Unit ID and command.

Insert a Buffered Command

There are two ways to insert a buffered command in Advanced mode.

Using the Edit menu

1 From the Unit ID drop-down box, select the unit ID of the instrument to send the command to.

2 Type a Command and Comment. (The comment is optional.)

3 Select Insert Immediate from the Edit menu. The new command will be inserted at the bottom of the command list.

Note: The command will not be inserted if there is already a command line in the list with the same Unit ID and command.

Using the + button

1 From the Unit ID drop-down box, select the unit ID of the instrument to send the command to.

2 Type a Command and Comment. (The comment is optional.)

3 Click the + button next to the Buffered button. The new command will be inserted at the bottom of the command list.

Note: The command will not be inserted if there is already a command line in the list with the same Unit ID and command.

Send an Immediate Command

Basic Mode

1 From the Unit ID drop-down box, select the unit ID of the instrument to send the command to.

2 Type (or select) a Command.

3 Click Immediate.

Advanced Mode

Using the Immediate button

1 From the Unit ID drop-down box, select the unit ID of the instrument to send the command to.

2 Type a Command and Comment. (The comment is optional.)

3 Click Immediate.

Using Execute from the Edit menu

1 Highlight the command to be sent in the command list.

2 Choose Selection from the Edit menu and select Execute. (Or, type Ctrl + E.)

Using the command list

Double-click on the command line of the command you want to send.

Send a Buffered Command

Basic Mode

1 From the Unit ID drop-down box, select the unit ID of the instrument to send the command to.

2 Type (or select) a Command.

3 Click Buffered.

Advanced Mode

Using the Buffered button

1 From the Unit ID drop-down box, select the unit ID of the instrument to send the command to.

2 Type a Command and Comment. (The comment is optional.)

3 Click Buffered.

Using Execute from the Edit menu

1 Highlight the command to be sent in the command list.

2 Choose Selection from the Edit menu and select Execute. (Or, type Ctrl + E.)

Using the command list

Double-click on the command line of the command you want to send.